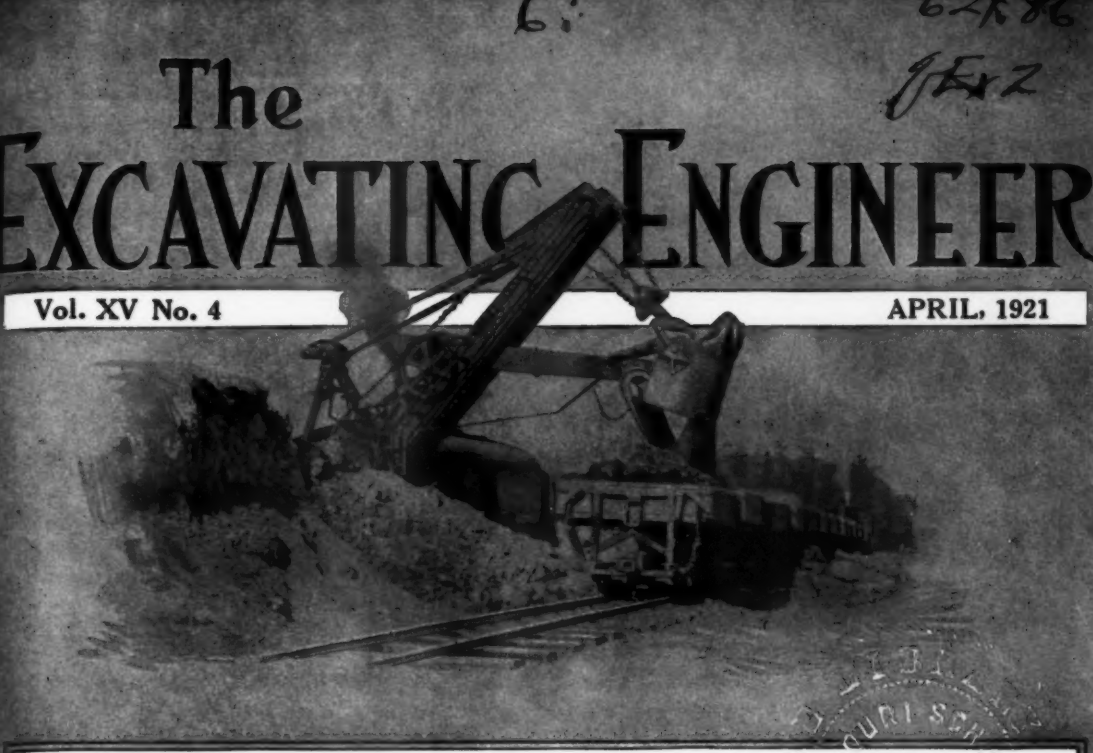
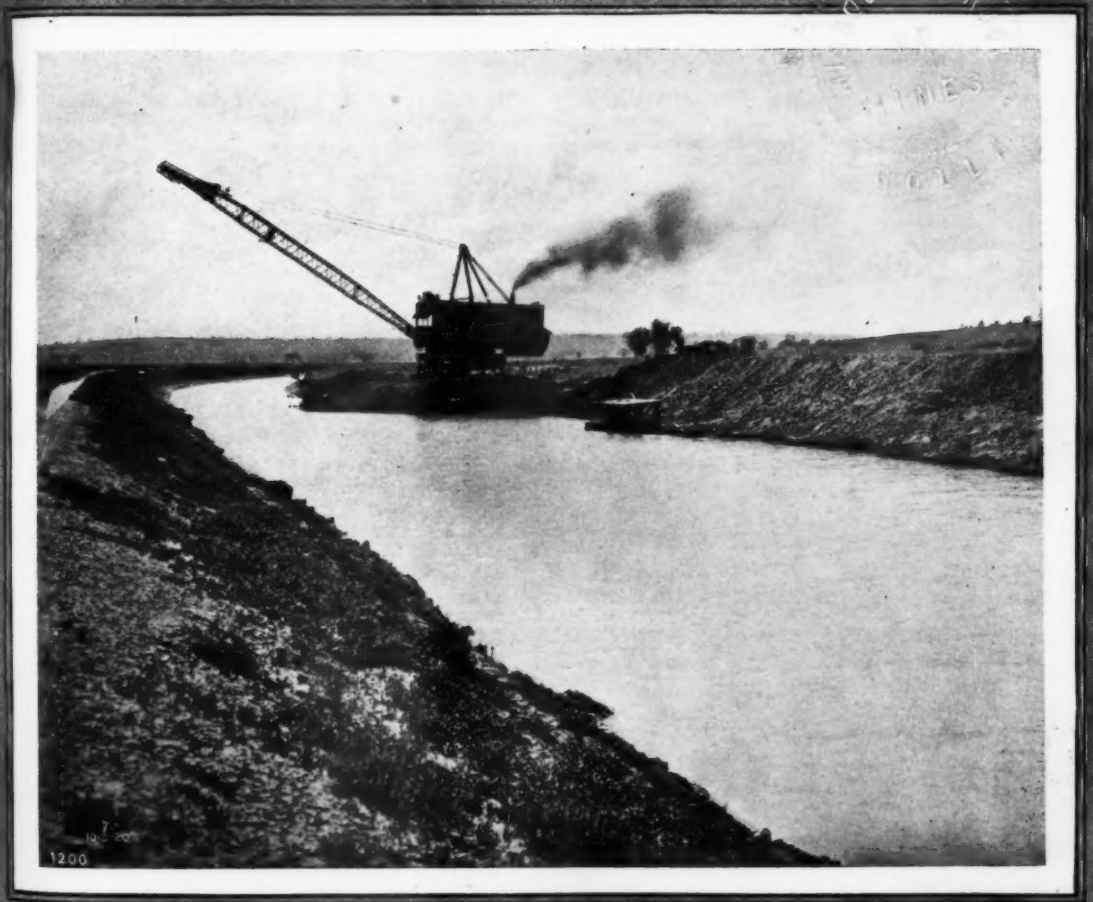
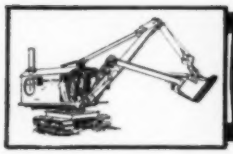
The Excavating Engineer

Vol. XV No. 4 APRIL, 1921







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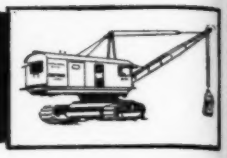

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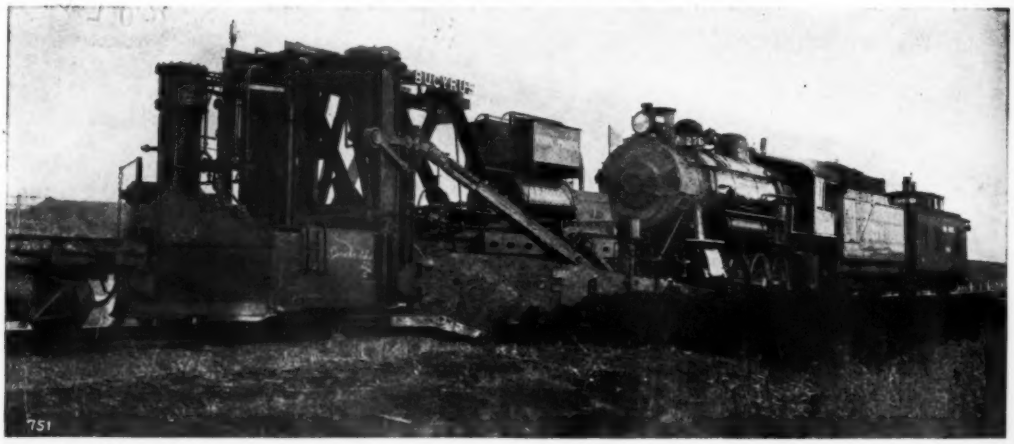

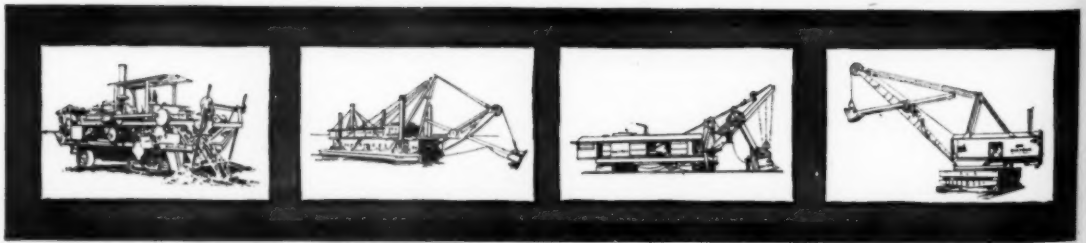

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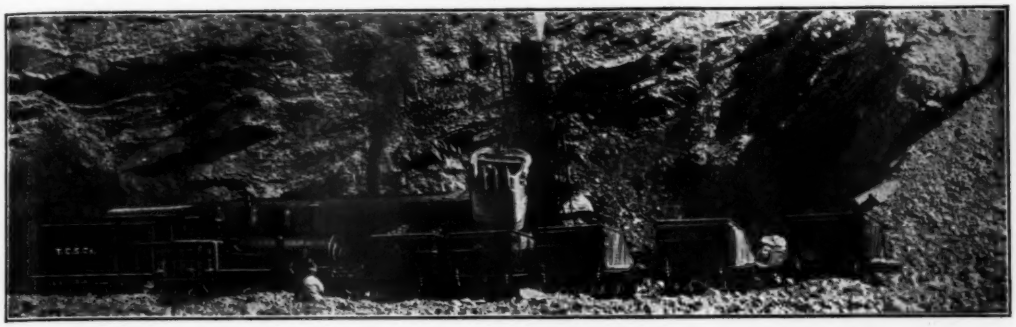

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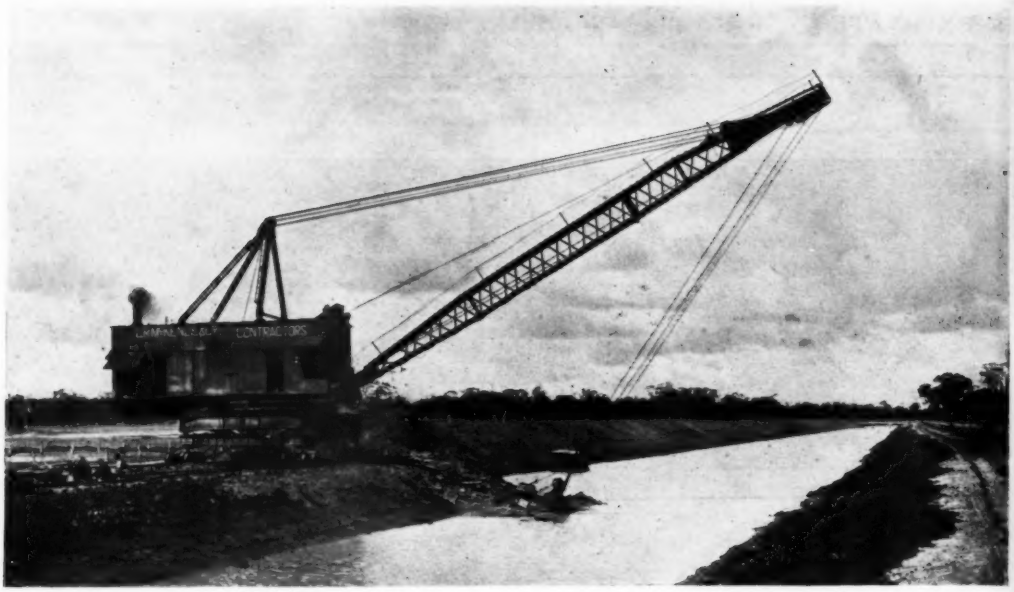


Figure 1 — Class-20 Bucyrus dragline in operation. Note excellent appearance of finished work.

Figure 2 — Berembed end of canal. New work on left side showing 60-ft. radius negotiated by Class-20 dragline. The machine climbed a one in twenty-two grade to get to this work.

Dragline Operation on the Murrumbidgee Irrigation Scheme in Australia

The Excavating Engineer

Vol. 15 APRIL 1921 No. 4

Australia's Largest Irrigation Project

Description of the Murrumbidgee Irrigation Scheme of the Water Conservation and Irrigation Commission of New South Wales. Work under way on Contract No. 64 consisting of 54 miles of canal enlargement with total excavation of 3,685,000 cu. yds. Detailed account of dragline operation.

WE are indebted to Mr. H. H. Dare, Commissioner of the Water Conservation and Irrigation Commission of New South Wales, Australia, under whom the above work is being carried out, for the following details descriptive of the general purpose and extent of this work.

Description of Scheme

The Murrumbidgee Irrigation Scheme is the largest irrigation project in Australia. Water is provided by means of a large concrete dam constructed on the Murrumbidgee River, with a capacity of about 771,000 acre feet. Water from this Dam is passed into the river, and at a point about 240 miles lower down is deviated by means of a weir into the main irrigation canal (see map Fig. 3). This canal is at present constructed to a point about 90 miles from the diversion weir, and is being extended over a further distance of probably about 30 miles, with the object of irrigating from 200,000 to 250,000 acres, chiefly for dairying and fruit-growing.

The Enlargement Work

When the scheme was originally formulated it was proposed to construct two canals, one on the northern and one on the southern side of the Murrumbidgee River, but subsequently it was found that the quality of the land on the northern side was superior and it was then decided to concentrate on this district, and to enlarge the main canal, which had originally been built with a capacity of 1,000 cubic feet per second. The enlargement has recently been commenced under contract with Messrs. C. R. McKenzie & Co., Ltd., the capacity at the off-take being increased to 2,000 feet per second. The contract includes the enlargement of about 54 miles of canal. The bed width at present varies from 50 feet at the off-take to 37 feet at the end of the section to be enlarged. These dimensions will be increased to 69 feet and 46 feet respectively. The batters or slopes for the most part are 2 to 1, and the flow depth of the original canal varies from 8 feet to 6 feet. Of the 54 miles of canal to be dealt with, 44 miles will be deepened from 18 inches to 2 feet.

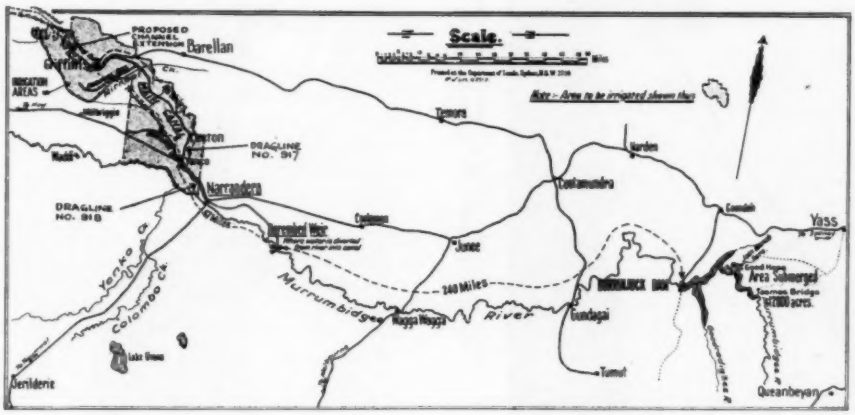


Figure 3 — Map of Murrumbidgee Irrigation Scheme, showing dam and irrigation area, and where the draglines are at work.

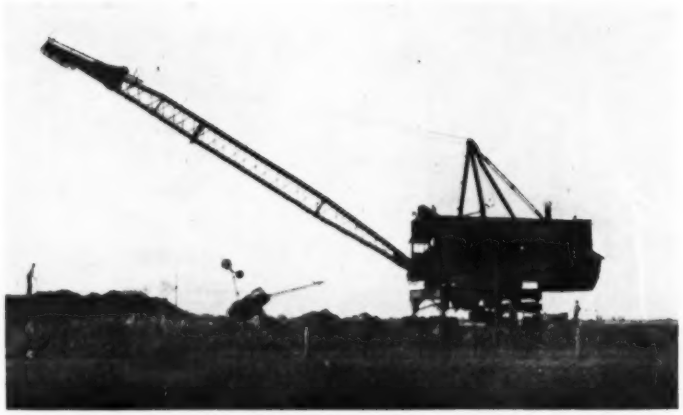


Figure 5 — Dragline casting wet material away from slope to overcome slipping. Dry material was borrowed here to build track foundation.

Figure 7 — Note sharp curves and true batters (slopes). Typical berm shown at top of new bank on right.

Figure 6 — Berembed end of canal. New work on right-hand side. Note runway for stock to water made in new bank.

Figure 8 — Class-20 in sticky material, showing wet material dumped well ahead of machine and away from bank. Gasoline pump in "punt" in foreground.

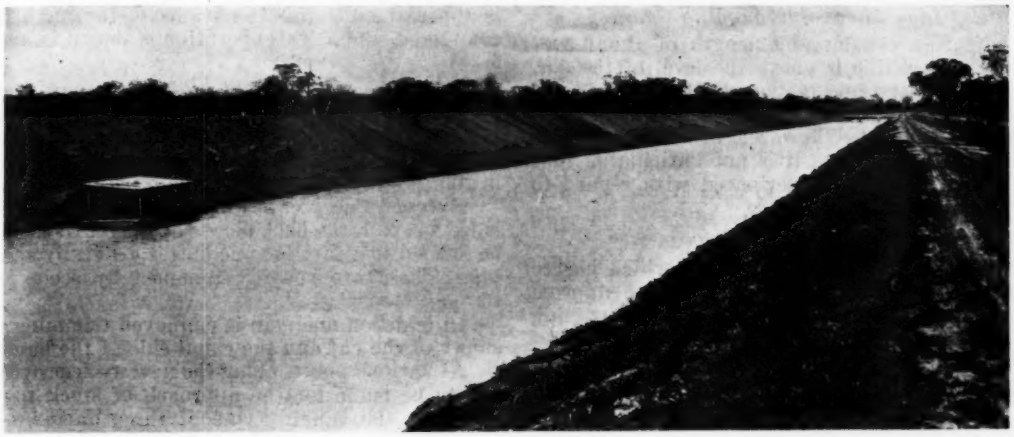


Figure 4 — Another view of enlarged canal showing work as finished by dragline, and completed section. Note excellent appearance of latter.

The soil for a small proportion of the length is of a sandy nature, but chiefly varies from sandy clay to heavy clay. Work was commenced on the 8th of March, 1920, with one Dragline Excavator with a bucket of three cubic yards capacity. On the 13th of May, 1920, a second machine was set to work.

The total quantity to be excavated is estimated at about 3,685,000 cubic yards.

The Equipment Used

The contractors, Messrs. C. R. McKenzie & Co., Ltd., are doing practically the whole of the excavation with two Class-20 steam-operated Bucyrus dragline excavators on self-propelling equalizing trucks and fitted with 85′ booms and 3 yard buckets. This bucket is ½ cubic yard greater than the standard recommended by the makers for use with the 85′ length of boom, but has been found satisfactory for operating in the materials composing the canal banks.

In addition to the above equipment a 30-B Bucyrus steam dragline mounted on caterpillars will be utilized for a small section of the work between Hay Road and Narrandera, and a hardwood "A". Frame, fitted up as an improvised dragline, will be utilized on another section for which it would not pay to knock down and re-erect one of the Class-20 machines, and to which it would be impossible to take one of these machines on its own running gear.

The plan shown in the map reproduced herewith shows the disposition of the main irrigation canal in relation to the Murrumbidgee River and the Burrunjuck Dam. The canal junctions with the river at Berembed, where the flow is controlled by means of a weir and regulator. The first Class 20 dragline, No. 917, was set up almost at Berembed Regulator. About twenty-five miles further down the canal is the Township of Narrandera, and the second Class-20 machine, No. 918, was set up just below this Township.

At the time of writing machine No. 917 has completed the section at the Berembed end, some five miles odd, which required widening, and this machine has been knocked down and transported to a point approximately forty-five miles further down the Canal, where it is being set up to work towards the furthermost end.

Material at Berembed End

A large quantity of the Material at the Berembed end handled by Machine No. 917 consisted of decomposed granite, which produced a very severe cutting action on the bucket and attachments. Between Narrandera and the end of the canal, however, the material is very much easier in this respect.

Swampy Country

Considerable difficulty was experienced about a mile from the finishing end of the Berembed section through having to take the machine across swampy country consisting of soft black soil and blue clay. The machine also had to climb a grade of one in thirty-three at this point. The length of this bad patch was about three-quarters of a mile.

Material, Hay Road Section

Immediately after starting up machine No. 918 at this section it was found that considerable difficulties were experienced with hard pan beds. At this point the cubic yards excavated per lineal yard of travel are only about thirty-seven, as against approximately sixty for Machine No. 917 working at the Berembed end.

The materials vary considerably, and some weeks the bucket required picking out four or five times per shift owing to the stickiness of the semi-wet material.

Flow Line Above Surrounding Country

There is a considerable length of canal over which the flow line is above the level of the surrounding country, and the new bank in these parts has, of course, to be watertight. The bank as built by the two machines, however, has been found to be well compacted, and it is not anticipated that any difficulty will be experienced with regard to its water-tightness.

Bridges and Regulators

Throughout the length of canal which has to be widened by the machines there are approximately forty bridges and regulators; in passing each of these points approximately one shift is lost in the actual excavating time—i. e., approximately one thousand cubic yards. In wet weather the lost time would exceed this figure. (See figure 9.)

Figure 9 — Class-20 after passing one of the many bridges across the canal. Note equalizing, self-propelling trucks.

Curves and Grades

Machine No. 917 working at the Berembed end had to negotiate a 60′ radius curve, which is illustrated in figure 2. Before arriving at this point the machine had to climb a bank of one in twenty-two, which it did very successfully. This grade was negotiated with the ordinary propelling machinery and the bucket was put into the ground and the dragline kept taut only as a safety precaution. Three thousand yards of material had to be borrowed at this point in order to build the grade up in front of the machine.

Banks and Wet Material

Below Narrandera some difficulty was found in keeping the bank up through having to excavate so much wet material—fully seventy-five per cent of the total is wet. This difficulty has been overcome by borrowing dry material where necessary to allow for laying the track ahead of the machine and by dumping the wet material considerably in advance of the machine on the outside of the new bank. Three to four yards of dry material per lineal yard has to be borrowed right along the canal below Narrandera to make up track for the machine. The furthest point of the wet material is approximately 150′ in advance of the end of the completed bank. This operation is shown in figure 5.

Trimming Slopes

The operators on both machines are so expert in the formation of the cut and bank that very little trimming is required. One man at the "tip" is able to keep the top of the bank as it should be.

Except in deep cuts where the muck excavated is led to spoil, the back slopes of the banks have to be formed to a three to one batter generally speaking. These are roughly trimmed by scoop and scraper.

In addition one man is employed trimming the slopes of the cut and the canal side of the bank.

At various points along the new work provision has to be made for the approach of stock to the water in the canal. One of these gaps in the banks is illustrated in figure 6.

In figures 2, 6 and 7 the water, except for a few inches in the bottom is out of the canal, giving a rather patchy appearance to the toe of the cut. It will be seen, however, from the finished work, as shown in figures 1 and 4 that an excellent job is being made.

Records of Work

The accompanying reports supplied by Messrs. C. R. McKenzie & Co., Ltd., indicate the rate at which the work is being carried out.

Machine No. 917

No. of Report	Week Ending	Total Quantity Excavated Cubic Yards	Average Quantity Excavated Per Shift (10 Hrs.) Cubic Yards	Average Distance Travelled Per Shift Lineal Feet	Average Quantity Per Running Yard Cubic Yards	Time Lost Due to Wet Hrs. M's.	Time Lost Repairs etc. Hrs. M's.
17	7-21, 1920	14,048	1,171	62.5	55.5		3 0
18	7-28, 1920	14,503	1,209	79	45		3 30
19	8- 4, 1920	12,379	1,032	75	42	10 0	3 45
20	8-11, 1920	11,986	999	75	40	5 0	4 0
21	8-18, 1920	10,322	860	75	34		9 0
	Total	63,238				15 0	23 15

Machine No. 918

24	11- 3, 1920	16,463	1,372	109	38		4 10
25	11-10, 1920	13,702	1,143	95	36		4 30
26	11-17, 1920	12,146	1,012	83	36	9 0	1 30
27	11-24, 1920	13,116	1,093	90	36.5		4 45
28	12- 1, 1920	10,061	839	67	37.5	15 0	11 30
	Total	65,488				24 0	26 25
	Nov. 1 to 30	56,768				24 0	25 0

In most instances the quantity excavated exceeds the amount paid for as above.

All measurements are prior to starting, and not bank measurement. These remarks apply to both machines.

General

The machines are provided with standard electric lighting equipments, and are operated in two ten-hour shifts per day—viz., 7 a. m. to 6 p. m. and 7 p. m. to 6 a. m.

Water supply is provided at each plant by means of a Petrol (gasoline) driven engine in a small punt, and the water is supplied to the machines through iron pipe and hose. At each plant

Figure 10 — View of Camp No. 2, showing wheels used for moving huts. This photograph was taken immediately after camp was shifted. Average distance shifted three miles. done in about 6 hours

a duplicate pumping equipment is kept in case of emergency.

The track sections are made up in 15′ lengths, the rails being secured to the sleepers by means of bolts and plates; these sections are swung around from the front to the back of the machine under the bucket, as it has been found better to do this than to pull the sections through by horse or otherwise. The maximum move-up per ten-hour shift to date is 135′.

The contractors on this work provide free huts for the men and board them at cost. The huts are substantial portable structures, as illustrated in figure 10, which shows the No. 2 Camp attached to machine No. 918.

The wheels used for moving the huts are also shown in this view, which was taken immediately after the Camp was shifted. The average distance of shifting Camp is three miles, which is done in about six hours. It is anticipated that each Camp will have to be shifted about ten times before the job is completed.

The longest length of straight canal so far is about one mile, but towards the end of the canal there is a further straight section about three miles long.

Note: Since the above article was written we have received a communication from our Australian correspondent quoting a letter received from Messrs. C. R. McKenzie & Company, Ltd., contractors on the Murrumbidgee Project in which they describe the moving of one of their Class-20 Bucyrus Draglines a distance of 48 miles down the canal.

We quote herewith an extract from this communication as we feel that this feat is undoubtedly worthy of note and will unquestionably interest contractors and engineers who are familiar with dragline operation.

"We have 'cut out' with our No. 1 Bucyrus at Berembed, and have dismantled, transported forty-eight miles, and re-erected the machine, in the space of fifty-two days.

"We 'cut-out' at Berembed on the 13th of November last, and commenced dismantling the machine on the 15th idem. The machine was transported in sections to Stony Point (a distance of forty-eight miles) re-erected and commenced working again on the 6th instant.

"During this period the Christmas and New Year's Holidays fell due, and we have six days of wet weather (which, here, is of considerable importance to the condition of the roads).

"You will thus see that the time above-mentioned should be reduced by a further ten days."

Coal Stripping and Mining with a Dragline Excavator

How C. J. DeFrees of Worthington, Indiana, Finding Coal for His Dragline Hard to Get on a Ditching Job, Solved the Problem by Going Into the Mining Business Himself.

THIS is the story of how a resourceful contractor, on discovering that he could not get coal to operate his Class-14 Bucyrus dragline excavator on a ditching job, actually found coal on property near by and proceeded to mine it with the same dragline excavator. In other words he made the machine work for its own sustenance.

Description of the Job

The contractor was C. J. DeFrees of Worthington, Indiana. His ditching contract was 2 miles north and 3 miles west of Worthington, digging the Houseville Drain. This is a drainage ditch constructed by Smith Township, Greene County, Indiana. This ditch varied from 10 feet wide by 9 feet deep at the upper end, to 16 feet wide by 16 feet deep at the lower end. The slope was one to one.

Coal Becomes Scarce

Mr. DeFrees had one and one half miles of the lower end of the ditch done when he began to have difficulty getting coal for his dragline. This soon became a serious problem. On finding that he

The floor of the pit with the dragline in the background, stripping off the overburden

was up against it Mr. DeFrees did a little prospecting on his own account. About 300 feet from where his dragline was working was an out-crop of coal. From time to time a few tons had been taken from the out-crop, but no one had thought of opening up the vein and using more than a small quantity at a time.

Mining Operations Started

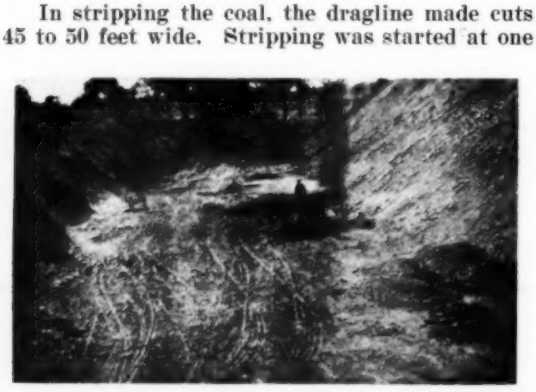
Mr. DeFrees immediately decided to strip and dig the coal with his dragline. The first step of course was to make the necessary arrangements to work the property. There were three acres of land which were cut off by the ditch which were considered worthless. Part of the coal was on this property. Mr. DeFrees paid the owner $50.00 for the right to dump dirt on this piece of land or do anything else he liked with it. He got half an acre of good coal out of this dump ground. He also bought the property containing the coal vein, for $200.00 per acre.

The next thing was to get the dragline onto the coal property. This in itself was quite a problem as half the distance was up a 37% grade, a stiff climb for a machine of this size. However, undaunted, Mr. DeFrees greased up all the gears, got up a full head of steam and drove at it. On the second trial his dragline successfully made the grade.

The overburden above the coal vein was 21 feet in depth and difficult material to dig. Very little blasting was necessary, however. It consisted of 12 to 14 feet of hard yellow clay on top, with 6 or 7 feet of shale underlying this, and 1 to 2 feet of sandstone next to the coal. The coal was of very good quality, from 30 to 32 inches thick.

Dragline Operation

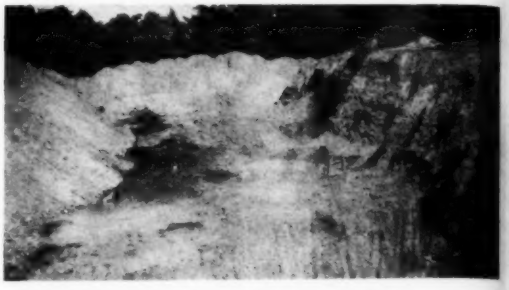
In stripping the coal, the dragline made cuts 45 to 50 feet wide. Stripping was started at one



This gives a good idea of the width of the cut made by the class-14 Bucyrus dragline. The machine can be seen in the background. The pit has been stripped down to the coal, which will be taken out by the dragline, on the return trip along left bank of the cut.

side of the 50-foot cut and the overburden was taken out down to the sandstone. Then, while the stripping was being done on the other half of the cut the sandstone was being blasted where the cut was already stripped. The machine then swung back and took out the blasted sandstone down to the coal, before moving ahead.

The cuts averaged 400 feet long. In taking these cuts the dragline stood on the center line of



A good view of the cut, showing the character of the overburden. The coal was drilled with mine augers and blasted before being mined by the dragline.

the cut and backed away, depositing material from the first cut on the ground on the extreme outside of the property. On reaching the far end of the cut the dragline turned around and on the way back mined the coal which had been uncovered in the first cut. At the same time the second cut was stripped and the material deposited into the pit which had already been cleaned of coal.

The coal was drilled with a mine auger and blasted before it was handled by the dragline. Some was taken out of the pit in trucks and wagons but most of it was put in stock piles by the dragline to be hauled out on the ditch later.

Mr. DeFrees was on the coal stripping job nearly three months and took out approximately 10,000 tons of coal. After finishing the coal stripping the dragline moved back and completed the ditch. The average haul from the stock piles to the ditch was about four miles.

The coal which was not used by the dragline was sold by Mr. DeFrees and is said to be the best coal ever mined in the county.

Use Your Head

A woodpecker pecks
Out a great many specks
Of sawdust
When building a hut
He works like a nigger
To make the hole bigger—
He's sore if
His cutter won't cut.
He don't bother with plans
Of cheap artisans,
But there's one thing
Can rightly be said:
The whole excavation
Has this explanation—
He builds it
By
Using
His
Head. —*Exchange*

Poor Girl

Willis: Saw a girl staggering down the street, the other night.

Hillis: Swacked?

Willis: No, she was a dizzy blonde. —*Pelican.*

Dragline Operation on Multnomah County Drainage District No. 1, Oregon

How Multnomah County is adding to its wealth. Description of interesting method of dike construction by dragline excavator — slope trimming with dragline.

IN April of last year work was completed on the third of the great drainage districts in Multnomah County, Oregon, just east of the City of Portland. The dragline work on this project, which constitutes the basis of this article, was done by E. J. Cheatham & Sons, General Contractors of Spokane, Washington.

Drainage Development in Multnomah County

Multnomah County Drainage District is the last and greatest of three districts which progressive citizens of this progressive county have been developing for the past five years.

At the very portals of the City of Portland there had existed an extensive area of overflow lands, plentifully be-sprinkled with lakes, willows and mud flats. It had been the accepted conviction that these lands were fit for nothing but an immense preserve, a happy hunting ground for the sportsman, with his gun or his fishing tackle.

The keen eye of the engineer, however, has invaded this "happy hunting ground" with the result that by the coming spring, Multnomah County will have 12,000 virgin acres of the richest alluvial silt agricultural lands added to its productive area at the very doors of the metropolis of the State. It is indeed striking to note that these 12,000 acres will be added to an available area of but 21,000 acres; all the county could boast of previously.

We need to add nothing to these cold facts to show what this means to the wealth of north-western Oregon.

In the general district commonly known as the Columbia Slough area there are four drainage districts: Sandy No. 1 to the far east, Multnomah No. 1 lying next and then Peninsula No. 1 and 2. Sandy District containing about 1500 acres, was organized in 1917 and is now in a high state of cultivation. The Peninsula Districts were organized in 1916 and 1917 but have not as yet attained the same high state of development. These districts contain about 2500 acres.

Multnomah District No. 1

The organization of Multnomah District No. 1 was completed shortly after Peninsula No. 2 in 1917. It embraces all the land from what is known as McBride's Slough to Fairview, a distance of 11 miles along the Columbia River, two miles wide at its widest part. One large dike starting at the highland near Fairview follows the Columbia to McBride's Slough, and then follows this slough to the high land across Columbia Slough.

Description of Dragline Work

The dragline work, with which this article is principally concerned, was in connection with the building of the high section of this dike. The work was done, as stated, by E. J. Cheatham & Sons on a sub-contract under the Warren Construction Company of Portland.

The dragline excavator used was a Class-14 Bucyrus equipped with a 60-foot boom and mounted on specially designed skids, described later.

Perhaps the most interesting feature of this work was the building of an 18-foot fill with the above mentioned machine, a job which ordinarily would require a much larger dragline.

Six thousand feet of the 11 miles of dike was built with this dragline, aggregating a total yardage of 101,000 cubic yards, at a price of 21c per yard. The balance of the dike, being low fill which had to be borrowed over a very wide area on the inside of the dike, was moved for the most part by teams.

E. J. Cheatham & Sons Class-14 Bucyrus Dragline Excavator at Work on the Dike for Multnomah County Drainage District No. 1.

That portion of the dike built by the dragline averaged 10 feet high with the exception of 600 feet of 18-foot fill at the high end on the work.

The dragline was moved to the job already set up on a large barge, and was unloaded at the point where the 18-foot fill dropped to the lower section.

After unloading, the dragline was moved a short distance inland from the river to a point about the center of what eventually became the borrow pit or the completed fill. This 600-foot section presented a problem. It was 18 feet in height with a 10 foot top and a 3:1 slope on the river side. This would give a base of about 118 feet. It was of course impossible to build this fill with a dragline equipped with a 60-foot boom unless it was handled twice. This course was determined upon.

The dragline was worked up the 600 feet towards the start of the high-section, the end of the

The Borrow Pit and Dike at the Eighteen-Foot Section of the Fill

section awarded to Mr. Cheatham. It was operated over this section in such a manner as to reach the extreme outside, or river side, of the borrow pit, swinging a complete half circle and depositing the material as far as possible from the pit. A portion of this material of necessity had to be deposited on what eventually became the berm area. No attempt was made to trim the slope.

On reaching the end of the section, the dragline had reached high ground and readily mounted the top of the fill just made, and worked back over this fill towards the point from which it had started. It took the material from the borrow pit area just moved over and rehandled that material that had been deposited on the berm area. The berm was cleaned up and the slopes trimmed and the full section of the dike completed. The back slope was not completed to a full 3:1 section, but left between 2:1 and 2½:1 which was satisfactory to the engineer in charge. The machine was carried over this fill as near the borrow pit side as possible. This method was the most economical possible under the circumstances, proved to be entirely satisfactory, and obviated the necessity of installing a larger dragline.

The balance of the dike ran under 10 feet in height and was easily handled in one operation, the machine swinging down to the berm and working straight through to the end of the 6000-foot section where it was reloaded on the barge.

Trimming the Slopes

The slopes were finished by the dragline with but very little hand labor. A "spotter" was posted on the top of the dike to spot the last buckets of each setting, thus eliminating hand work to the minimum, in fact all the trimming necessary was smoothing up the last buckets full on each setting.

Output

The material handled was loam soil with some clay. Two 8-hour shifts were worked per day, the machine averaging 910 cu. yds. per shift, although there were days when as much as 1200 cu. yds. were handled in a shift.

Mounting

The dragline mounting was unique. The skids or "runners" were 24 in. x 30 in., 55 feet long. These traveled on eight cross logs 30 feet long and 18 in. thick, hewed flat on two sides. These logs were kept well greased. After moving ahead the cross logs were picked up with a cable loop attached to the dragline bucket and swung in front of the machine.

The machine was moved by means of a double drum American donkey engine with cylinders about 8 x 10, mounted on the front of the skids. To the drum was attached a set of double blocks and ⅝" line, 1000 feet of 1⅛" line was run ahead and anchored to a deadman. This line was in 200-foot sections. After the machine moved ahead 200 feet, the set of double blocks was run out to the next 200-foot section. In moving ahead the ground man operated the moving engine and the dragline operator helped start the load by setting the bucket as deep as possible and giving a quick

This View Gives a Good Idea of the Mounting of the Class-14 Bucyrus Dragline

pull on the loading line. The dragline bucket was also used to hold the machine in line in rounding curves where there would be a tendency to slide to one side.

Steam was taken from the dragline boiler to the moving engine through pipe and swivel joint connection through the center of the dragline. One man on the ground took care of the entire moving operation which was controlled by the operator. The contractors started work on February 4, 1920 and completed the contract on April 15th of the same year.

The superintendent in charge of the work was Jay Cheatham and the dragline operators William Seal and Ed. Gustafson. All engineering details of the above work were in charge of W. G. Brown, 1313 Yeon Bldg., Portland, Oregon, who acted as consulting engineer for the district board. In addition to his work on the actual construction of the levee Mr. Brown designed and built a very complete and unique pumping plant to take care of surface water and other necessary drainage.

We are indebted to G. A. Cheatham for the above data and photographs.

Farthest North for Steam Shovel Operation

18-B Bucyrus Revolving Shovel owned by Kings Bay Coal Company of Norway is Operating Inside the Arctic Circle on the Island of Spitzbergen

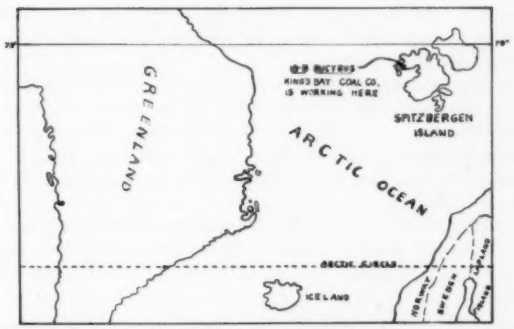
IT is doubtful if a steam shovel will ever be on the job nearer to the North Pole than the 18-B Bucyrus shovel which is rehandling coal for the Kings Bay Coal Company on the Island of Spitzbergen off the coast of Norway.

Spitzbergen Islands lie north of the Arctic Circle between 76°-30′ and 80°-30′. There are several coal mines on the islands, but the mine farthest north is Kings Bay Coal Co., 79° north latitude. The islands were known by the old Norske Vikings before the year thousand, re-discovered by a Dutch navigator Willem Barends in 1596. In the 17th century a number of whaling expeditions were sent there by the Dutch, English and Norwegians. The whale, however, became scarce and excepting a few Norwegian sealing schooners the islands were seldom visited before coal mining started on a small scale about 1900.

Up to the peace conference in Versailles in 1919 Spitzbergen was "no man's land" with rather lawless conditions. Since that time they belong to Norway.

Coal Mining on the Islands

The coal deposits worked are usually laying about 200 meters (650 feet) above sea level, the coal being transported to the seashore by ropeways. At the Kings Bay deposits the mine is, however, very little above sea level and the coal is transported to storage piles or to the loading pier on a 36″ gauge railway which by far is the most northern in the world.



This map shows the location of the Kings Bay Coal Co., where the 18-B Bucyrus is at work. This is farther north than any steam shovel has ever operated.

The coal is of very good quality comparing favorably with the best kind of English east coast coal. Ash varies from 1.7% to 7%. Heat values about 7300 calories.

The climate on Spitzbergen is dry, not extremely cold in winter. The temperature very seldom

The Kings Bay Coal Company's 18-B Bucyrus shovel at work rehandling coal on Spitzbergen Island, north of the Arctic Circle. Never before and probably never again will a picture of a steam shovel be taken nearer the North Pole than this one. The 36-inch gauge railroad shown in the photo, which is used to transport coal to the steamers, is the northermost railroad in the world.

goes much under 15° below zero in winter time. The average temperature for the year is about 24° Fahrenheit, only 2 or 3 summer months having an average temperature above the freezing point.

The air is very pure and healthful, several cases of beginning consumption being known to be cured in short time.

Navigation is open on the average 100 days a year from the last half of June to the middle of September. The first ship, however, goes up to Spitzbergen early in May, but passengers, mail, supplies, etc. have then to be taken over the shore ice on sleighs.

The small Bear Island laying about midway between Norway and Spitzbergen having been counted as a part of these islands can ship coal the whole year when a breakwater is built and the present poor harbor improved.

A Long Day Shift

The sun does not go below the horizon on Spitzbergen from about April 20th to August 24th and it does not come above the horizon from October 26th to February 16th. The darkness is, however, not as bad as should be expected, on account of the aurora borealis and the moon, which of course can be seen in the daytime too when the sun is not above the horizon. The only communication Spitzbergen has with the outside world when shipping is closed on account of the ice is through the wireless telegraph station erected by the Norwegian government about 1912.

Among the larger companies which at present are conducting mining operations on Spitzbergen may be mentioned Store Norske Spitzbergen Kul Co. This firm owns very large tracts of good coal land. They bought about 10 years ago The American Arctic Coal Co.'s property and mines. Production has been about 50,000 tons annually, but it is expected next year to reach 80,000 tons. Kings Bay Coal Co. is also Norwegian. Their mines are said to have some of the best coal in Spitzbergen and a very large amount of coal is in sight. Production last year was approximately 25,000 tons. There are also about 8 or 10 smaller Norwegian concerns, and other Swedish, English and Scottish Companies operating coal mines on the islands.

The total coal shipped last summer was expected to reach about 95,000 tons. The actual tonnage shipped is not yet known. With short shipping season the winter's production has to be stored near the loading pier. This is done in large piles in open air. On account of the dry climate little trouble with freezing together of the coal except in the bottom layers is experienced. When the shipping season is opened the number of miners usually is doubled and the coal from the mine, as far as possible, is sent direct to the ship.

Steam Shovel Operation

During the shipping season the coal in storage is rehandled to cars running on the pier tracks by cranes with grab buckets, or with steam shovels.

The 18-B Bucyrus shovel bought by the Kings Bay Coal Co. is used for this class of work and according to their engineer has done very satisfactory work. It has been running two seasons without a single spare part being required.

This shovel is able to handle the bottom layer of coal in the stock pile without difficulty. This layer is usually frozen and can not be taken out with the grab bucket.

As the coal mines are developed the population is increasing and living conditions are improving. If the coal continues to be of good quality there is no doubt that more mines will be opened and the islands will become more important as coal producing centers.

Reclamation Service Progress

In the February issue of the Excavating Engineer an article appeared on dragline operation under way on the Boise project, in connection with which it was stated that not all of the work of irrigation, as is generally supposed, is for the purpose of supplying water to arid lands. In the case of certain soil conditions it frequently becomes necessary to remove excess water from beneath the surface so as to prevent or rather to check seeping and water-logging of the soil and the deposition of alkali.

In the report of the Secretary of the Interior for the fiscal year ending June 30, 1920, special emphasis was laid on this point. It was stated that this problem is closely allied with that of the excessive use of water, and went on to state that there will surely be a drainage problem on most projects, since the escape of some water to the lower levels cannot be avoided. Consequently, a large part of the funds available must in the future be employed in the construction of drainage work.

The results in the past, however, have fully justified the cost. In the year 1919 about $89,000,000.00 worth of crops were grown on the 1,113,469 acres of land on the projects completed and under construction by the Reclamation Service not including about $64,000,000 from acres served with water by the Works of the Service under special arrangement. This crop value has increased to this figure from $15,700,000 in 1913. The projects not completed will comprise ultimately an area of more than 3,300,000 acres.

The Excavating Engineer

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THE EXCAVATING ENGINEER PUBLISHING CO.

Bradlee Van Brunt, Manager and Editor

South Milwaukee, Wisconsin

Bad Times and Foreign Trade

Among the many causes advanced for the present business stagnation is the plugging of our avenues of foreign trade by the high rates of exchange now existing. Whether or not this be the greatest cause is neither here nor there; the fact is that it is a cause, indisputably, and a most important one, and consequently of vital interest to us all.

In order to remove this cause as far as possible and to free those great avenues of foreign trade, to the mutual satisfaction of buyer and shipper, there is under way the formation of the Foreign Trade Financing Corporation. Although this Corporation is still in the process of formation and although some time must pass before any negotiations are possible through this channel, even should its organization be successful, we feel that the following clear exposition of its functions, by John McHugh, Chairman on organization for the corporation, should be of interest to our readers whether or not they are directly concerned with foreign trade.

A prominent banker of Louisville, Ky., recently made the following statement regarding present business conditions.

"Our preachments at the present time are the reverse of what they were a year ago. Then we were asking producers to speed up and farmers to plant bigger crops; now we are suggesting to manufacturers that they reduce their output, and are actually man-handling the farmers, particularly tobacco growers and cotton planters, to reduce their output. Either our theory was wrong then or it is wrong now, and I am inclined to believe that we were nearer right then than we are now. What really ails us is that our avenues of distribution have been cut off."

It would certainly be better for everybody concerned—and everybody in this country *is* concerned—if the theory of full production under which we were operating a year ago, is the right one. When our factories are running at capacity, when farmers are bending every effort to produce record crops, at such times there is employment for everyone, money is plentiful—in short, we are enjoying "good times." On the other hand, when factories are wholly or partially shut down and when farmers can find no market for their products, there is unemployment and distress, and we have "hard times."

Last year we saw the transition from the first stage to the last. A year ago we could not produce things fast enough to meet the demands; now we can not sell things fast enough to take care of a greatly diminished production.

Naturally, when a man cannot sell a thing in one place, he turns to another and tries to sell it there. In the case of the United States just now, the natural thing is to turn to the rest of the world and see whether we cannot sell our surplus products there. It has been tried. It cannot be done. Why? Because the exchange of almost every foreign country is so depreciated that the people will not buy from America unless absolutely necessary and then they take only what they cannot get anywhere else. Moreover we have extended to these countries all the short-term credit that banks of this country can handle.

How, then, are we to get back to full production and "good times?" It can be done only by extending to foreign buyers long-term credits, allowing them time to put to work the raw material and machinery they buy and letting these earn the money to pay us. It is something we have never done before, but we must do it now. We have reached a point where we produce more than we can consume; the surplus must be exported. Every sale in a foreign market means a day's work for American labor.

It is time to meet this important need that the Foreign Trade Financing Corporation is being formed under the Edge Act. This Corporation, the largest so far conceived under the provision of that law, will provide the long-term credits foreign buyers need to enable them to buy American goods, thereby keeping factory wheels, plows, railroads and steamships of this country busy.

The Foreign Trade Financing Corporation is now being formed under the guidance of its Committee on Organization, on which are represented all branches of American industry. It is intended to make this corporation as representative as possible by including in its personnel men from all sections of the country and from every line of industry; in other words, the Corporation will be made up of American farmers, business men and bankers.

The Corporation will aid the foreign buyer to purchase American goods and at the same time re-

(Continued on page 128)

· FIELD NOTES ·

Device to Prevent Propelling Chains from Slipping

A veteran steam shovel runner, Fred Breman, 482 Church Street, Portland, Oregon, has sent us a sketch, together with a description of a propelling chain guide which he has devised in order to guide propelling chains on standard railroad type shovels. Mr. Breman informs us that this device has been tried out with considerable success in Oregon on a 45-ton Bucyrus shovel owned by the Utah Construction Company. He finds that it completely prevents the propelling chains from jumping off propelling sprockets when the shovel is making a sharp turn and furthermore is very effective in preventing slipping over worn

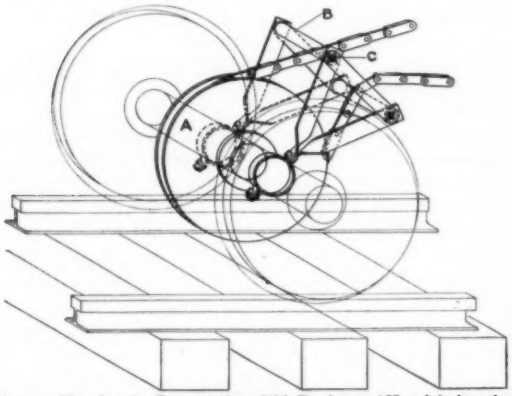


Diagram Showing the Construction of this Device, and How it is Attached to the Driving Axle on a Railroad Type Shovel

sprockets. He sends it to us in the hope that it may prove of value to other shovel operators.

As shown in the accompanying sketch, this guide is a simple frame, consisting of two collars mounted on each side of the propelling sprocket. These collars, together with the framework, are made from bar iron and pipe and bolted together. In the sketch it will be noted that the top lead of the propelling chain is tight and consequently the shovel is propelling ahead. When the shovel is moving back, the bottom chain, in tightening, lowers the guide automatically.

The details of construction are as follows:

The guide is constructed of two triangular side frames, held apart by distance pieces on which rollers run. The side frames are each made of three pieces of 2½" x ¼" bar iron. Two of these pieces are twisted as shown in the sketch, to fit around the propelling shaft "A", and are bolted around the shaft with 2½" bolts. The guide is so constructed that it will turn easily around the propelling shaft. The distance from the center of the propelling shaft to the center of the rollers "B" is 24".

The rollers are made of 1½" pipe 10" long. These rollers turn on distance pieces made of ¾" pipe 10¼" long. This gives the rollers a ⅛" clearance at either end. Two 13" bolts, "C" running through the distance pieces, bolt the side frames together.

How to Steer a Traction Wheel Shovel

In moving a traction wheel shovel equipped only with hand steering device from one job to another over pavement the hand steering device is often inconvenient and slow. Mr. A. M. Owen, a well-known shovel operator of Dixon, Illinois, gives us the following method of steering a shovel of this type. This method of steering is of course not recommended for use on shovels equipped with power steer, as it produces side strains on the dipper and boom.

Drop the dipper as close to the front truck as possible, midway between the wheels. Attach a ¾" chain to the axle just inside the wheel, by putting a ¾" bolt through the links with a washer on either side. Run this chain through the dipper braces making it fast to one of these by looping the chain around it. Then attach the chain to the other side of the axle just inside the wheel.

Loosen the chain from the hand steering device so that the wheels can be turned freely in either direction. Then raise up with the boom engine till the chain is tight and put a 1¼" nut in the racking on the dipper stick to hold the dipper stick in this position. Then pull up with the hoisting engine till the hoisting cable is tight. This must be done carefully.

Now use the swing engine for steering. The front axle turns as the dipper moves to one side or the other.

This steering device can be put on or taken off in three minutes, and of course is much better than putting the dipper out to one side and skidding the machine to the position wanted, as is often done.

This Wasn't a Hardware Store

Moses—Have you heard about the fire at Jacob's place?

Isaac—Yes, the police seem to think it vos an electric light on the first floor and the insurance company think it vos an incandescent light on the ground floor.

Moses—Vell, my opinion is that it vos an Israelite in the basement.

Horse Factory

"Mamma," said a little boy after coming in from a walk, "I've seen a man who makes horses."

"Are you sure?" asked his mother.

"Yes," he replied; "he had one nearly finished when I saw him; he was just nailing on its back feet."

UMI

DEVICES YOU OUGHT TO KNOW ABOUT

Blaw-Knox Clamshell Buckets—Lever Arm Type

The development of the lever arm, or "crow-bar" principle, as applied to clamshell buckets, has made this type of rehandling equipment the most simple, and withal most powerful, speedy and effective when working in all kinds of materials.

The lever arm in a clamshell bucket is the "crow-bar" of the closing arrangement. Riveted to the end of the scoops with a simple tackle pulling on end, forcing with a powerful motion the main hinge up towards the head—the terrific closing force exerted by the lever arm is automatically transferred through sturdy rigid corner bars to the scoops causing them to dig deep and pick up a capacity load.

Blaw-Knox Lever Arm Clamshell Bucket

Fewer operating parts lighten the bucket—permitting the use of stronger material in the construction of the corner bars and scoops, thereby insuring maximum strength, rigidity and length of service. Upkeep expenses are practically nil, there being no intricate mechanism to wear out from the abrasive action of the material handled.

Greater operating speed can be attained with lever arm buckets because the reeving is simple. A limited number of sheaves for the reeving to pass over enables the bucket to open and close more quickly. The holding and closing lines of the bucket can be arranged so that each lead is absolutely straight from sheave to sheave—a system entirely free from S-Bends in the reeving which materially reduces wire rope wear and avoids friction losses. Blaw-Knox buckets of this type are especially valuable to the handler of heavy and compact materials. Greater closing power and speedy bucket operation can be obtained with a minimum of crane effort. Their size is only limited by the capacity of the crane, and it has been conclusively proven that they are ultimately the most economical and efficient equipment for the majority of digging, dredging and rehandling purposes.

Announcing a New Explosive that Cannot Freeze

The Atlas Powder Company, Philadelphia, Pa., has succeeded in producing a non-freezing explosive, the qualities of which are such a distinctive type, that it is bound to be welcomed eagerly by all blasting operators and especially by those who do cold weather blasting.

Briefly, the qualifications of Atlas Non-Freezing may be stated as follows: (1) Five grades for every blasting requirement; (2) Cannot freeze at any temperature; (3) Withstands the heat of summer; (4) Its stability avoids premature explosions (nothing weaker than a No. 6 Blasting Cap should be used to detonate it); (5) Will not cause headaches to those who use and handle it; (6) Made in all standard size cartridges.

Five Grades—This means that there is sufficient variety to meet every blasting requirement. In order to determine which is the proper grade for a particular piece of work, it is advised that the consumer consult with the Atlas Powder Company and state exactly what the nature of the work is and what results are desired. The Company's Service Division, which consists of men with expert knowledge and years of experience in the use of explosives, will recommend, after making careful investigation, the grade which will bring about maximum results.

Cannot Freeze—There is a volume of significance in this qualification. We can get an idea what this means by reminding ourselves of the difficulties that the users of explosives must overcome when blasting in cold weather. If the temperature of the atmosphere is 40 degrees or lower, a stick of dynamite becomes a dangerous substance, No one is fool-hardy enough to attempt to use chilled or frozen dynamite, until he has thawed it completely. Many hazardous methods of thawing dynamite are being followed by blasters. The most common is by setting the sticks on end in front of an open fire. Another is by placing the sticks in warm water. Other methods are to put the dynamite near or under stones or boilers, or on top of boilers. It is wrong even to suggest any

Bucyrus 30-B dragline excavator owned by the Bronx Parkway Commission of New York State enlarging the Bronx River on the improvement work now being done by the Commission.

Enlarging levees at Peters Landing, Arkansas, Second District, [illegible] here shown, between the head and tail towers is 450 feet; the [illegible] in the background. This works ahead of the tower excavator, [illegible] thus building the banquette over which the head tower [illegible] 4 Clydes and 1 Lidgerwood along the river between [illegible]

This view and the one on the left show two of the three 40-R Bucyrus railroad type shovels owned by the Antofagasta Bolivian Railway Company of South America. These photos were taken at the station of Agnas Calientes in April 1920. Two of the shovels are working on the Cochamba Branch line of this railroad and the other is working close to LaPaz.

Commission with a 5-yard Bucyrus Tower Excavator. The span
been dumped on the levee. A Class-9½ Bucyrus dragline is shown
top of the old levee and throwing it inside of the original levee,
the present time there are 13 Bucyrus Tower Excavators,
. Two of these Bucyrus Machines belong to contractors
Government.

of these methods, because they are extremely dangerous for reasons that are too numerous to mention. There is only one safe way of thawing frozen dynamite and that is in following the methods recommended by the Explosive Manufacturers. But, it can be readily seen, this means an expenditure of money and time, and there is always a possibility of the dynamite not being completely thawed on the first trial, which will require a rethawing unless chances are taken with using partly frozen sticks.

"Cannot freeze," applied to this new Atlas explosive, gives positive assurance of an explosive which can neither be chilled nor frozen and which can be used and handled with no decrease in its effectiveness in weather when the temperature is way below zero. Here, at last, is an explosive which defies all degrees of cold or heat, in which man may live, to change or affect its ingredients. All its qualities remain continually at the same high standard in the heat of summer as well as in the extreme cold of winter. Because of this fact, thawing or "doctoring" is not necessary and should not be attempted with Atlas Non-Freezing. These distinctions are of special importance to quarries which continue their blasting during the winter months. No thought of "might freeze" is ever associated with Atlas Non-Freezing. No need to worry about the possibilities of a misfire or a poor shot on account of chilled or frozen dynamite. No need of taking the risk of inefficient loading which usually happens when the explosive charges must be placed hurriedly for fear of chilling. But the qualifications of Atlas Non-Freezing do not end here.

No Premature Explosions—This feature is indicative of the great stability of Atlas Non-Freezing. It requires a No. 6 Blasting Cap to detonate it successfully. That means that no ordinary blow or shake-up can be the cause of an explosion. Moreover, this stability remains unaltered and the explosive charge is always in perfect condition for effective detonation.

No Headaches—This is a feature which particularly those who handle and use ordinary dynamite can appreciate, for, in the majority of cases, men experience a throbbing headache as a result of handling dynamite. Because Atlas Non-Freezing will not cause headaches, the good will and cheerful spirit of the men who handle it, are retained. Every superintendent knows how vitally important this feature is.

It will not—	*It will—*
	Do effective blasting.
Freeze.	Bring about desired results.
Need to be thawed.	Remain perfect in zero weather.
Explode prematurely.	Withstand heat of summer.
Cause headaches.	Avoid hasty loading of bore holes.

The Atlas Powder Company makes every effort to bring about maximum results in the use of explosives and is pleased to meet the particular needs of individual concerns, no matter how unusual conditions are. It is advised that every concern consult the Atlas Service Division and receive, as a result of this co-operation, the proper explosive for their blasting requirements.

Bad Times and Foreign Trade

(Continued from page 123)

lieve the American seller of carrying the burden of slow payments. For example, suppose a merchant in Spain desired to purchase a bill of goods in the United States. At the office of the Foreign Trade Financing Corporation in his country he would apply for a loan, stating what he could put up as collateral; this would be investigated, not only by the Foreign Trade Financing Corporation, but also by the Federal Reserve Board. If the security proved satisfactory, credit would be extended and placed to his account in America. Thus enabled to purchase American products and pay the shipper on delivery, he receives and disposes of the goods, while the Foreign Trade Financing Corporation charges him interest for the use of the money until the loan is paid. So the Corporation will work for the good of everyone, and business throughout the world will be stimulated.

Construction in 1920 and Forecast for 1921

According to statistics recently compiled by the F. W. Dodge Company, the amount of money spent on construction work during 1920 in the 25 northeastern states of the country was practically the same as in 1919, but on account of increases in construction costs, the volume of construction paid for by this amount of money was nearly one-fourth less in 1920 than in 1919. The total amount spent on construction work in this territory was somewhat over two and one half billion dollars.

Regarding construction prospects in 1921 the F. W. Dodge Company report that conditions this year are very similar to those which prevailed at the opening of 1919. The accumulated demand for building is very large, but owing to unsettled prices for materials, prospective builders are slow to act. About April 1919 many builders became convinced that material prices would not fall and activity in construction work increased rapidly. It is probable that a similar movement will take place within the next month or so, for the same reasons, as it seems unlikely that any immediate decrease in construction costs can be expected.

Closer

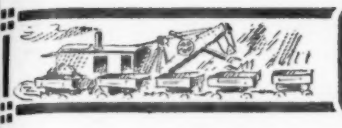
Bones: What's a divorce suit?
Groans: The opposite of a union suit. —*Purple Cow.*

Teacher: "John use the word gruesome in a sentence."
John: "When I got back from my vacation in the country mother said I sure had grewsome."

Yes, Indeed

"The more a man has the more he wants," said the fat man.

"You wait until you have triplets in the house and you'll change your mind," replied the thin man.



SHOTS FROM THE · FIRING LINE ·

Alabama

L. O. Polloch is manning an 80-B Bucyrus shovel for the Pratt Consolidated Coal Company, at Gamble Mine. This shovel is stripping coal.

C. B. Craddock is craning on a Bucyrus shovel for the Barrett Company, at North Birmingham.

Arizona

State Highway Dept., Phoenix let the contract paving 8.8516 mi. Tucson-Nogales Highway, Sect. A, 18 ft. wide, Federal Aid Project 29, to J. L. Hoopes, Miami, $305,616. Work involves 2,825 cu. yd. excav., at $1.50 per cu. yd., 22,605 cu. yd. borrow, $.60, 93,351 cu. yd. plain concrete $1.33, 3,460 cu. yd. caliche or gravel shoulders, $1., 40 cu. yd. Class A concrete (box culverts) $17.36, 14 cu. yd. Class A concrete (culverts) $17.36, 42 cu. yd. Class B concrete (slab culverts) $17.36, 1,684 lb. reinforcing steel $.03.

Canada

Mr. G. C. Dunn, formerly Engineer of Construction, Grand Trunk Pacific Railway has been appointed Assistant to Chief Engineer, Canadian National Railways, with headquarters in Toronto.

Winnipeg again welcomes her visitors to the Annual Bonspiel. Great interest is being manifested in the matches, though the mild weather has not been conducive to bringing out the fine points of the game or the generalship of the skips.

A great rush of prospectors to the newly discovered oil fields of Northwest Canada is expected to take place as soon as weather conditions permit of overland travelling. Stringent regulations have been made by the Federal Government to govern the staking out and working of claims.

The Manitoba & North Western Railway Company will apply to the Parliament of Canada at the present session, to construct and operate a railroad from Tuffnell to Prince Albert.

Mr. F. L. Butler, Manager of the Winnipeg Electric Railway has resigned to take charge of the Georgia Railway and Power Company's Railway Dept., at Atlanta, Georgia.

This year's programme of work on the Alberta and Great Western Railway contemplates approximately eight miles of grading, to obtain a more favorable location into Fort McMurray. It is hoped to have the entire line in good condition by next Fall.

It has been officially announced that construction work on both the Canadian Pacific and Canadian National Railways will be reduced to a minimum this year.

Alfred and Caledonia Twps. let contract for building drainage ditch, which involving 85,000 cu. yd. excav., to H. J. McAimmon & Co., Lancaster, $46,347.

Edmonton and Vicinity

Mannix and Walgren are erecting their Lidgerwood Dragline at Kinistino, Sask. where they have 223,000 yards of canal to dig on the Waterend Lake Drainage job.

The Provincial Government of Alberta have been asked to guarantee bonds for an Irrigation Project in the vicinity of Medicine Hat.

The Northern Construction Co., Ltd. are having a Class-45 Atlantic repaired at Lac la Biche for use on the Alberta Great Waterways Ry. They will also use a 70-C Bucyrus on the same job this season. J. S. Rupert and C. Cruse are looking after the repairs.

The farmers in the Waterhole District west of Peace River Crossing, Alberta, are pressing the Government of Alberta to build an extension on the Edmonton, Dunvegan and B. C. Ry. into their District. The bonds for this extension were guaranteed several years ago. The Premier has promised them that their wants will be fulfilled. This means an extension of about 35 miles. The only part that will be heavy construction will be going up Peace River Hill where about 600,000 yds. will have to be moved.

Dame Rumor has said that the Blue Diamond Coal Mining Co. Ltd., of Brule, Alberta, are going to build an extension into their mining claims about 40 miles north of Brule, Alta.

The Mountain Park Collieries are preparing to build an extension into their stripping property near Cadomin, Alta. This will mean about six miles of side hill work. The seam of coal that they will cut into is 200 feet in thickness and is of a good grade of bituminous.

Vancouver Notes

A delegation representing the city of North Vancouver, the city of Vancouver and the district of West Vancouver will approach the provincial government with a view to securing a subsidy of $400,000 towards the construction of a bridge at the Second Narrows.

At the forthcoming session of the Provincial Legislature application will be made by Davis and Co., solicitors, of Vancouver, for a private bill incorporating clients as a company with power to build and operate a railway of standard gauge, about 55 miles long.

A pulp and paper mill, costing between seven and eight million dollars, is to be established here, according to plans now being completed with Provincial Government officials, by Robert Tyhurst, of Dome Creek, B. C.

Dr. King, Provincial Minister of Public Works, assured a deputation from here that the Government would hard-surface the stretch of road from Langley Prairie to Murrayville.

Colorado

The State Highway Dept., Denver, let the contract grading and draining 6.847 mi. Muddy Creek Rd. above Kremmling, 28 ft. wide, Federal Aid Project 75, Grand Co., to Hinman Bros., Kremmling, $22,235; 4.884 mi. road between Victor and Cripple Creek, 20 ft. wide, Federal Aid Project 52, Teller Co., to E. H. Honnen, Colorado Springs, $23,817; 1.748 mi. road between Colorado Springs and Canon City, 28 ft. wide, Federal Aid Project 47, El Paso Co., to Pickering Bros., Salt Lake City, $21,663; grading, draining and gravel surfacing 3.504 mi. between Wray and Schramm, 28 ft. wide, Federal Aid Project No. 40, Yuma Co., to E. Lindsey, Denver, $22,350; paving and draining 2.727 mi. Morgan-Brush Rd., 18 ft. wide, Federal Aid Project 38, Morgan Co., concrete to La Nier-White & Co., Ft. Morgan, $68,613; grading and surfacing .758 mi. road, 28 ft. wide, and building bridge over Platte River between Lake George and Divide, to have two 40 ft. spans, Federal Aid Project 112, Park Co., to J. R. Donaghy, Pueblo, $21,046; paving and draining 1.334 mi. road from Boulder eastward, 18 ft. wide, Federal Aid Project 87, Boulder Co., involving 14,092 sq. yd. concrete to A. Dobie, Poplar and North 2d Sts., Sterlings, $42,232.

Florida

J. A. Graham let the contract for building 12 mi. main canals and laterals, involving 125,000 cu. yd. dry rock excav., to Thompson & Moseley, Healey Blk., Atlanta, Ga. About $50,000.

Major C. Hinton is operating a 175-B Bucyrus dragline for Swift & Company, at Alafia. This dragline is employed in stripping phosphate overburden and he states is excavating 225 yards per hour. His address is R. R. No. 1, Plant City.

Wm. T. Lundquist is operating a Class-24 Bucyrus dragline for the W. F. Carey Company, at Standard Mines. This shovel is employed in stripping phosphate overburden area of which covers 320 acres. Lundquist's address is R. R. A., Box 90, Lakeland.

R. B. Logan is firing this dragline. His address is also R. R. A., Box 90, Lakeland.

UMI

Illinois

Contract for paving various roads in Dist. 3, has been awarded by the Bd. of Local Improvements, to Keeley Bros., East St. Louis, at $51,884.

Indiana

Vigo Co. had plans prepared for grading 1 mi. Fruit Ridge Ave., Harrison Twp., involving 4,460 cu. yd. earth excav., and 20,670 sq. yd. vitrolithic concrete, etc., cost $92,407; grading and building culverts on 2 mi. G. Trumiee Rd., Riley and Pierson Twp., 4,300 cu. yd. earth excav., 4,720 cu. yd. gravel, $26,215; 2 mi. Scott Burgan Rd., Lost Creek Twp., 21,710 cu. yd. earth excav., 4,500 cu. yd. gravel, $48,970; grading, building culverts and new bridge on 1 mi. Fruit Ridge Ave., Harrison Twp., 5,500 cu. yd. earth excav., 12,890 sq. yd. vitrolithic concrete, etc., $75,980; grading, building culverts and retaining wall and repairing bridge on 1 mi. Wallace Ave. Rd., Harrison Twp., 4,440 cu. yd. earth excav., 9,300 sq. yd. vitrolithic concrete, etc., $52,915; 4,984 ft. G. L. Spear Rd., Lost Creek Twp., 7,490 cu. yd. earth excav., 9,970 sq. yd. vitrolithic concrete, $55,647. G. R. Grimes, County Bldg., engr.

Contract for the construction of 7 mi. of improved road in Monroe Twp., Epike Co., awarded to Tyring Bros., at $61,400.

Iowa

Contract for constructing roads, awarded by the Co. Comrs. of Boone Co., to Munson & Sons, Boone, at $40,271.

Contract for paving 4.9 mi. Dickinson Co. Highway south from county line to Milford, awarded by the county comrs. of Dickinson Co. to Koss Construction Co., Des Moines.

Kansas

By spring Missouri, Kansas & Texas trains will be running to Liberal, from Wichita Falls, Tex., O. P. Byers, president of the Anthony & Northern Railway system with headquarters at Hutchinson, announced on January 28. Two construction trains are now on the job building the road from Forgan, Okla., to Liberal.

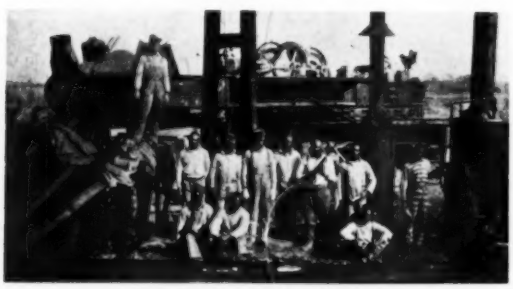
Kentucky

B. A. Worthington, Indianapolis, Ind., Pres. of the Cincinnati, Indianapolis & Western R. R., and M. E. Mogg, Prest. Linton Collieries Co. of the same city, are reported back of the plan to build a 125-mi. railroad from Middlesboro and Pineville, to Williamson, W. Va. Frank Fitzgibbons, Pineville, is working to secure rights of way.

Contract was awarded to Costello Bros. & Mayes, Knoxville, Tenn., at $77,000 for 14 mi. Ohio River road from Hardinsburg to Meade County line, Breckenridge County; Joe S. Boggs, State Highway Engr., Old Capitol Bldg., Frankfort.

Contract was awarded to Hancock Construction Co., Lewisport, at $120,000 for construction of 13½ mi. Ohio River road from Hawesville to Davies County line, Hancock County, Joe S. Boggs, State Highway Engr., Old Capitol Bldg., Frankfort.

Louisiana



Jim Sullivan and His Gang

This is the crew that erected a Class-24 Bucyrus Dragline on the Angola Plantation of the Louisiana State Penitentiary. The machine will be used for building a levee around the Plantation to hold back the Mississippi River during the flood season. Wm. Gibbons is superintendent of the Plantation and H. L. Fuqua is general manager. The gentleman at the left, who, as can easily be seen is on a higher plane than the rest, is the only one in the picture who does not have to take orders from the trusty with the gun. He is Jim Sullivan, the operator of the dragline. The rest of the crew are convicts from the "pen" and although they look like a hard-boiled bunch they got the big machine together under the direction of Sullivan and S. A. Johnson and E. L. Bumstead, two Bucyrus erectors.

Contract was awarded to Nixon Transfer Co., Anniston, Ala., for graveling 20 mi. State highway in East Caroll Parish. Address A. L. Blakemore, Lake Providence.

Joseph A. Bacus is working on a Class-9½ Bucyrus dragline for U. S. Engineers for the Mississippi River Commission. This dragline is employed in building levees near the mouth of the river. His address is 1024 Adams Street, New Orleans.

Massachusetts

The Bay State Dredging & Contracting Co. were awarded contract for dredging at refuse receiving station, Victory Road, Dorchester, at $1,850.

Missouri

Keating Bros. of Auburn, Ill. awarded the contract for the construction of about 65,000 cu. yds. of earthwork in the Degognia and Fountain Bluff Levee and Drainage District, at 28 cents a cubic yard.

Drainage Dist. No. 12, C. L. V. Jones, Clk., New Madrid County, let contract to Otto Kochtibgley to construct Little Otter Slough ditch, Big Otter Slough and Little River ditches.

The Board of Supervisors, Scott and Stoddard Counties, let contract building Little River, D. D., to W. E. Callahan Constr. Co., Gt. Sou Life Bldg., Dallas, Tex. Scott Co. includes 3 mi. combination ditch and levee to divert waters of Sals Creek, involving 218,000 cu. yd. dragline excav., at $0.249 per cu. yd., 1,500 cu. yd. rock excav., $1.45, 2,500 sq. yd. rip rap slope paving, $1.10; Stoddard Co. includes 15 mi. channel improvement and enlarging same for 9 mi., involving 500,000 cu. yd. dragline excav., $0.1975 per cu. yd. and 200 acres clearing, $95.

New Mexico

Contracts awarded in connection with bids opened on federal aid projects March 8, 1921:

Project No. 1-C, Colfax County, J. V. Stryker Construction Company, Denver, Colorado, cost $64,762.04, exclusive of 10% for engineering and contingencies.

Project No. 27, McKinley County, Lee Moor Contracting Company, El Paso, Texas, cost $153,250.27, exclusive of 10% for engineering and contingencies.

Project No. 29, Eddy County, Dan La Roe, Palestine, Texas, cost $69,128.29, exclusive of 10% for engineering and contingencies.

Project No. 50, Luna County, J. V. Stryker Construction Company, Denver, Colorado, cost $61,781.00, exclusive of 10% for engineering and contingencies.

Project No. 51, Socorro County, J. V. Stryker Construction Company, Denver, Colorado, cost $56,933.58, exclusive of 10% for engineering and contingencies.

New York State

The Godwin Construction Company, 130 E. 44th St., New York, have secured contract for cellar excavation consisting of approximately 60,000 yards of rock at 161st St. and Broadway, New York City.

N. S. Colson, one of the best known shovel operators in the east, having been on practically every size Bucyrus shovel from a 14-B to a 225-B, was in New York city a few weeks ago.

Northern States News

The Northwestern General Contractors Association held their 1921 convention on March 11th and 12th at the St. Paul Hotel, St. Paul, Minnesota. At the closing business session of the two-day convention an election was held for officers for the ensuing year. Charles Ffolliott, president of A. Guthrie and Company of St. Paul, was elected president of the Northwestern Association of General Contractors. Other officers elected are: Vice-president, H. N. Leighton, Minneapolis; second vice-president, J. H. Ellison of the Winston-Dear Company, Minneapolis; third vice-president, K. P. Grant of the George J. Grant Construction Company, St. Paul; treasurer, Claude H. Siems of Siems, Helmers & Schaffer, St. Paul, and the three directors for three years are C. R. McCann, Eveleth, Minnesota, Oliver Mattison, Minneapolis, and Gilbert W. Haggert, Fargo, North Dakota.

After a long delay the White Bear road contract was finally let by the Ramsey County, Minnesota, commissioners on March 12th to Fielding & Shepley, St. Paul contractors, for the sum of $329,866.45. The pavement will be of Warrenite bitulithic. The contract for paving covers a distance from the St. Paul City limits to the shore of White Bear Lake.

Only three of the six road jobs in Hubbard County, Minnesota, bids for which were asked on March 2nd, have been awarded. The successful bidders on these three jobs are Mike Barrett, St. Cloud, Minnesota; Jarvies & Suiter, Cass Lake, Minn.; and Wilkins & Pettyjohn, Park Rapids, Minnesota.

One of the largest Federal Aid Projects, from the standpoint of excavation, to be let in the State of Minnesota was awarded on March 1st to A. Guthrie & Company, St. Paul, Minn. This work comprises the grading of 27.2 miles, involving approximately 400,000 cu. yds. of excavation. This road extends from Grand Rapids, Itasca County, Minnesota, to the St. Louis County line, east of Keewatin.

The completion of erection of the new Class-24 Bucyrus dragline excavator belonging to the John Wunder Company, Minneapolis, Minnesota, was made about the middle of March. This machine is now being employed to clean out the waste slump adjacent to the washing plant. After this job is completed it will be moved into the gravel pit and proceed with stripping of the overburden and mining of the gravel.

The 225-B Bucyrus electric shovel belonging to the M. A. Hanna Company and operating at the LaRue Mine near Nashwauk, Minnesota, has about finished its stripping work as a steam shovel. Dragline equipment consisting of 155 ft. boom and 5 yard Paige bucket will be substituted for the present steam shovel boom, dipper and dipper handle.

The contract for graveling 7 mi. Federal Aid Project No. 82, was awarded by the Co. Comrs. of Pipestone Co., to Nolan Bros., Minneapolis, Minn., at $30,000.

Notes from the Pacific Coast

BY A. L. HILL, PORTLAND, OREGON

The Oregon State Highway Commission opened bids on Tuesday, March 8th for $1,500,000 of work and have awarded contracts.

Of the total, about ninety per cent is for paving and bridges with about ten per cent of the total for grading new roads.

Grading contracts were awarded as follows: Warren Construction Co., 5½ Miles regrading for $69,121.50; V. R. Dennis, 1¼ Miles grading for $9,175.00; A. D. Kern, 11.6 Miles grading for $64,460.00.

The larger paving contracts were awarded as follows: Warren Construction Co., 6.7 Miles Paving for $244,753.75; J. E. Bonell, 8.57 Miles Paving for $280,135.00; A. D. Kern, 10.55 miles paving for $350,915.00; Cochran Brothers, 7.6 miles paving for $321,181.00.

Bids will be received early in April for grading several new roads.

Lumber Conditions in Pacific Northwest

Signs of improvement in the lumber and logging industry in the Pacific Northwest are beginning to be noticed in resumption of work on a small scale at various mills and logging camps.

The lumber companies, as in many other industries, find that depreciation of plant and equipment is very rapid when idle and those that have room to store material, are manufacturing some lumber and a few others are overhauling their plants to be ready for work when orders begin to come in.

Ohio

The city of Cleveland received bids grading, draining and paving East 89th St. from Quincy Ave. to Buckeye Rd., involving 3,000 cu. yd. earth excav., 5,000 lin. ft. 4 in. drain tile gutter and 80,000 sq. ft. vitr. brick, from River Constr. Co., 12109 Mayfield Rd., $63,476; Enterprise Paving Co., 8440 Bway., $63,952.

This city also received bids grading, draining and paving Templett Ave. and East 117th St. from Lakeview to Durant Aves., involving 780 cu. yd. earth excav., 2,390 lin. ft. 4 in. drain tile gutter, 38,800 sq. ft. vitr. brick and 3,200 sq. yd. asphalt, from Gould & Maybach, 823 East 150th St. $29,184 Baldwin Bros., 4500 Euclid Ave., $30,045.

MIAMI CONSERVANCY NEWS

Mr. Frank C. Roberts, operator on the Lidgerwood Electric has completed the job of moving the machine from Wolf Creek to Millersford, three miles south of Dayton where the machine will be engaged in levee work this summer.

Wm. Heller will be on one of the Class-24 Bucyrus Electric Draglines at one of the big jobs of the Miami Conservancy this coming summer. His present address is 50 Green Street, Dayton.

Germantown

The work on the dam is about completed. Dismantling was continued throughout the month of February and at present time is practically completed. The large dragline has been entirely dismantled and was shipped to Piqua. The reservoir above dam has been cleaned up. This work consisted of felling old trees which were liable to wash away during high water and cleaning up any rubbish that obstructed the creek bed.

Englewood

The large electric dragline has again engaged in operation on permanent spillway operation.

Hamilton

Electric dragline is completing the work on west bank above Columbia bridge. The total channel excavation to February was 861,700 cubic yards.

At Black Street bridge the Class-14 Bucyrus dragline has completed excavation, on pier No. 1.

Taylorsville

The progress of the excavation from the outlet channel has been very satisfactory. The temporary channel along the east half of the outer channel will be completed by the middle of this month. This is well up to schedule and will permit the closing of the old channel as soon as danger of spring flood is past.

The dredge pumps have been repaired and pipe lines relaid. They are now pumping into portions of the dam west of cross dyke. This pumping will continue until the old river channel is closed.

Oklahoma

Comrs. Carter Co. let contract for graveling 16 mi. of road, 18 ft. wide, to Maney Bros., 304 Empire Bldg., Oklahoma City. About $340,000.

Pennsylvania

Carl Swisher is operating a Marion 300 for H. C. Frick at Masontown, on the night shift. Fred Malone is on the day shift on the same machine.

The State of Pennsylvania built 410 mi. of road during 1920, besides resurfacing 577 mi. of macadam road and surface treating 1,480 mi. of road. The plans for 1921 include the completion of 350 mi. of concrete road and the letting of 350 mi. concrete road in addition.

Public Service Commission ordered dangerous grade crossings on state highway routes in Washington county, crossed by Pittsburgh & Charleroi Street Ry., abolished.

Pittsburgh and Vicinity

F. A. RUMBARGER

The majority of the bids received by the Pennsylvania State Highway Commission February 18th were rejected and it is reported will be re-advertised in the near future. A few contracts have been awarded on the letting of February 18th.

D. E. Gilmore, who has been running shovels in this vicinity for the past several years is now trying his hand at selling Fords.

Buck Turnham, Shovel Engineer has been laid up with the grippe for the past week.

R. D. Lloyd of Steubenville, Ohio, was a business visitor in Pittsburgh several times during last month. Mr. Lloyd has been busy getting a large coal stripping operation started in the State of Indiana, known as The Vulcan Coal Company at Evansville, Ind.

South Carolina

State Highway Dept., Columbia, let contract to J. C. Fairey, Orangeburg, at $101,000 for 16 mi. Charleston-Moncks Corner Road.

Southern States Notes

BY C. N. BALLENTINE AND E. J. WILKIE, BIRMINGHAM, ALABAMA

The Herbert-Fischer Brick Company, of Memphis and Nashville, Tennessee, have taken over the South Memphis Brick Company's plant and are making a large number of improvements prior to starting up the plant. They recently purchased a modern steam shovel for handling the clay.

Work has been started on the construction of a new tile plant at Decatur, Alabama by the Alabama Brick & Tile Company. Drain tile and brick will be manufactured and it is expected to have the plant running in about two months.

The Tennessee State Highway Department, including all engineers and contractors engaged on work, recently held a meeting at Nashville to discuss the program of road work in the state. This department now has under contract work amounting to about $9,000,000.00. Additional work will be let this Spring.

T. G. Imel, M. Miller, Russell Logan, Tom Purcell, Fred Hoppiditz, and M. B. Edmondson are firing Class-24 Dragline Excavators for W. F. Carey & Company, near Lakeland, Florida.

The Nixon Transfer Company, of Anniston, Ala., were recently awarded a contract to gravel a twenty mile stretch of road near Lake Providence, La. A. L. Blakemore of Anniston will be in charge of the work.

T. R. Keister, shovel engineer is looking for a position. He may be addressed at P. O. Box 622, Fort Smith, Arkansas.

M. C. Hinton is operating a Class-175 Dragline Excavator for Swift & Company, at Alafia, Florida, stripping overburden from a phosphate deposit.

W. M. Welsh, General President of the International Brotherhood of Steam Shovel and Dredge men has been spending some time in the South in the interest of the Brotherhood. He was accompanied on part of his trip by Geo. R. Dempster, Representative of District No. 3, Knoxville, Tennessee.

List & Gifford Construction Co., have shipped their Class-14 Bucyrus Dragline to Honduras.

Mr. W. B. Garrett is superintendent in charge of the operations of the Cibolo Gravel Co., San Antonio, Texas.

The Clem Gravel Co., Dallas, Texas have moved their offices to the Sumpter Building. Mr. Clem states that business is fairly good.

Lone Star Stone Company have opened a new office at 416 Dan Waggoner Building, Fort Worth, Texas. The quarry is located at Chico, Texas.

The Buckeye Stone Co., has been organized in Dallas, Texas.

McClung Construction Co., were successful bidders on a large road contract near Henderson, Texas.

Recent reports indicate that considerable sewer work will be done in Jacksonville, Florida during the present year.

Comrs. Kleburg Co. received bids for improving 11.6 mi. of State Highway 12 from Riviera to Brooks Co. line, (a) clearing and grubbing, grading and surfacing, (b) draining, from T. E. Ruby, Buda, (a) $47,823; Starkey, Smith & James, Houston, (a) $49,590; Blackwell & Polly, Lockhart, (a) $53,243; A. C. Buchanan & Son, Temple, (b) $17,201; Ririe & Montander, San Antonio, (b) $17,681; W. T. Montgomery, Alamo Bank Bldg., San Antonio, (b) $18,599.

Rockwall Co. let the contract grading and draining Rockwall-Chisholm Rd. involving 75,000 cu. yd. earth excav., 650 cu. yd. Class A and 550 cu. yd. Class B concrete, 95,000 lb. steel, etc., to Smith & Hill, Temple, $64,340.

E. B. McClintock, judge El Paso Co., let the contract for grading, draining and paving 15.45 mi. of Alamogorda Rd., State Highway 33, to El Paso Bitulithic Co., Piedras St., $327,170, including 10% for engineering and contingencies.

Harris Co. D. D. 8 let contract for building ditch, involving 800,000 cu. yd. excav., to J. B. Arpin, Wisconsin Rapids, Wis., $0.287 per cu. yd.

The right of way for a new belt railroad in Fort Worth, has been purchased by the Houston & Texas Central R. R. The property is now being cleared for use. When completed, the line will open up a large amount of trackage property east of the city.

The Wichita Falls & Southern R. R. was given authority by the Interstate Commerce Commission on March 3 to build an extension of its line from Newcastle to Jinkurn. Protests against the building of the road were made without avail by the Texas & Pacific, the Gulf Texas & Western, the Eastland Wichita Falls & Gulf Railway and the Cisco & Northeastern Railway. The extension will reach extensive deposits of coal in the vicinity of Newcastle.

Virginia

Construction of a branch line 25 miles long by the Interstate Railroad from Norton, to a connection with the Carolina Clinchfield & Ohio Ry., about nine miles west of St. Paul, was authorized February 28 by the Interstate Commerce Commission. The line will serve coal mines. The commission denied the application of the same company to build a branch 15 miles long in the same territory, holding the mines to be served were on the line of the Norfolk & Southern Ry.

Washington

Skogit Co. let contract for grading and graveling 2.5 mi. Minkler-Hamilton Rd. from Sedro Woolley to Hamilton, to Skagit Constr. Co., Mt. Vernon, $24,832.

City of Seattle received a bid, grading and filling 1st Ave., S., involving 200,000 cu. yd. earth excav. and 228 lin. ft. concrete pipe culvert, from Puget Sound Bridge & Dredge Co., Central Bldg., clay, $87,966, concrete, $8,194; paving above street, involving 4,900 cu. yd. earth excav. and 24,700 sq. yd. 6 in. concrete, from S. A. Moceri, Alaska Bldg., $27,174, R. G. Stevenson, 1327 Ewing St., $27,632, J. M. Keating, 907 19th St., N., $28,754.

I. S. Hood is manning a Model 21 Marion steam shovel for the Keasel Construction Company, at Tacoma. This shovel is on a state highway job. His address is c/o Croft Hotel, Tacoma.

West Virginia

Reedy & McChesney have a job at Elk View, consisting of 1¾ miles of road, 50,000 yards of excavation. They are using a Bucyrus 14-B traction wheel machine. Henry Calwell is the shovel runner.

Brown & Floyd, Charleston have a 3 mile road job in Elk district, Kanawha county, 50,000 yards of excavation. Masonry is all finished and they are ready to start excavation. Their type "O" Thew is on the job with their new 14-B Bucyrus caterpillar shovel.

The following jobs were awarded last year to Randich Construction Co., and they in turn have sub-let the work.

Ingraham Branch to Page 4½ miles, 45,000 yards of excavation, sublet to George Woolfolk & Company. They are using Randich's 14-B Bucyrus caterpillar machine and the work is progressing nicely. They have one mile finished.

Kanawha county job between Paint Creek Jct. and Gallagher 5 miles, 40,000 yards of excavation, sublet to Baily & Murphy. The job is progressing nicely, being about half completed. They are using their Osgood 18 shovel and a man by the name of Bailey is the shovel runner.

Deep Water to Montgomery job 6 miles, 60,000 yards of excavation, sublet to Brown & Company. They are using a type B Erie machine—job is progressing nicely, about three quarters completed.

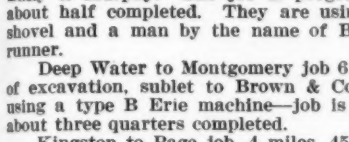
Kingston to Page job, 4 miles, 45,000 yards of excavation, sublet to J. M. Lipscomb & Company. The job is about completed. They are using a type "B" Erie.

Page to Robinson job, 4 mi., 40,000 yards of excavation, sublet to George Woolfolk & Company—job progressing nicely. They are using an Osgood 18 caterpillar machine.

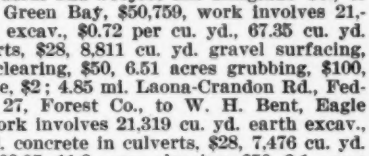
Wisconsin

State Highway Comn., at div. office 8, 1st Natl. Bank Bldg., Superior, received bids improving 9.8 mi. Ashland-Iron River Rd., Federal Aid Project 121, Bayfield Co., involving (1) 113,014 cu. yd. earth excav., (2) 602.7 cu. yd. concrete in culverts, (3) 73.81 acres clearing and grubbing, etc. from C. R. McLean, Duluth, Minn., (1) $0.75, (2) $31, (3) $200, total cost, $124,460; W. Conway Green Bay, (1) $0.81, (2) $33, (3) $115, $125,494; Rood Constr. Co., Superior, (1) $0.79, (2) $37, (3) $125, $126,608. Above bids rejected and work will be readvertised.

State Highway Comn., at div. office, 7, Courthouse, Rhinelander, let contract improving 5.64 mi. Deerbrood-Kempster Rd., Federal Aid Project 222 Langlade Co., to Brogan & Burns, Green Bay, $50,759, work involves 21,909 cu. yd. earth excav., $0.72 per cu. yd., 67.35 cu. yd. concrete in culverts, $28, 8,811 cu. yd. gravel surfacing, $3.20, 9.27 acres clearing, $50, 6.51 acres grubbing, $100, 60 lin. ft. iron pipe, $2; 4.85 mi. Laona-Crandon Rd., Federal Aid Project 27, Forest Co., to W. H. Bent, Eagle River, $40,767; work involves 21,319 cu. yd. earth excav., $0.54, 53.86 cu. yd. concrete in culverts, $28, 7,476 cu. yd. gravel surfacing, $2.95, 11.8 acres clearing, $50, 9.1 acres grubbing, $100, etc.



PROSPECTIVE CONSTRUCTION



Alabama

Bids will be received until April 15, by Comrs. Jefferson Co. for surfacing 3 mi. Waterworks Rd., 18 ft. wide, sheet asphalt on reconstructed macadam base; about $32,000; 2 mi. Emsley-Mulgg Docena Rd., 18 ft. wide, bitulithic on reconstructed macadam surface, $21,000; 3 mi. Inglenook connection, 18 ft. wide, asphalt on concrete base, $90,000; 11 mi. North Bessemer Rd., 18 ft. wide, asphalt or Warrenite bitulithic wearing surface on reconstructed base, $185,000; 5 mi. Birmingham-Pratt City Rd., 18-30 ft. wide, asphalt on concrete base, $160,000; 3 mi. Birmingham-Irondale Rd., 18 ft. wide, asphalt or Warrenite wearing surface on concrete base, $90,000; 4 mi. Wylan-Edgewater Rd., 18-30 ft. wide, asphalt or Warrenite wearing surface, $52,000. S. R. Batson, co. highway engr.

Arkansas

Commisioners of the Farelly Lake Levee District of Jefferson and Arkansas Counties will advertise for bids soon for the completion of said district which includes 108,000 acres of land. John M. Gracie, of Little Rock, chairman of the Commissioners. Ayers and Miller, Engineers at Memphis, Tenn.

The Missouri Pacific R. R. is about to extend its line from Womble to Plainview, where it will connect with the road from Russelville. Work on the road bed will begin shortly. The citizens of Womble will make an effort to have the railroad change its right-of-way to avoid disturbing the business section—the railroad having had right of way through the town square for a number of years.

Federal Power Comsn., Washington, D. C., granted permit to Dixie Power Co., Walker V. Powell, Prest., 1100 Title Guaranty Bldg., St. Louis, Mo., to build hydro-electric plant on White River; construct highhead dam to back up White River for 100 mi. and produce 100,000 horse primary power to transmit to cities in Arkansas, Missouri and Oklahoma; in addition to power feature, construction of dam will result in control of flood waters in lower White River basin and create lake 7 mi. square; Henry A. Allen, Consit. Engr., Chicago, Ill.

Canada

The Temiskaming & Northern Ontario Ry., is planning to build a 90 mile line from West Tree to Swastika Junction, Ont.

The Mayo Valley R. R., Ltd., proposes to build a railroad from the junction of the Mayo and Stewart Rivers, in the Yukon Territory in the northerly direction following the valley of the Mayo River to its junction with Duncan Creek, A. J. Gillis interested in project.

City of Windsor plans to improve and extend electric railway system, involving 3 mi. new trackage, new cars, repairs, etc. About $1,250,000. T. U. Fairlie, 57 Murray St., Toronto, engr.

Grand Trunk Ry., McGill St., Montreal, Que., plans to build 1¼ mi. spur line at Sarnia. About $35,000. C. Forrester, London, dist. engr.

The Esquimalt & Nanaimo R. R. will construct a railroad from Port Alberni, B. C., to Great Central Lake, a distance of 10½ miles. The work will include the erection of a steel lattice girder span with a 150 foot deck on concrete piers and four frame trestles, costing approximately $480,000.

The Hudson Bay Co. is actively and seriously looking into the proposal to build a light-gauge railway across the Portage from the Slave river to the Mackenzie at Fort Smith. Nothing will be done in the way of actual construction this year. Preliminary plans are already under way, and the road will be commenced in 1922 if the present plans work out satisfactorily.

Florida

Comrs. Nassau Co. and State Highway Dept., Tallahassee, plan to hard surface 10 mi. road from Yulee to

Wilds Ferry, 18 ft. wide, vitr. brick or asphalt. Cost between $75,000 and $150,000. C. Brown, state rd. engr.

Georgia

Sylvester will pave 2 mi. Sylvester-Albany highway; bids opened. Address Worth County Commrs.

Indiana

Vigo Co. plans to grade, grub and build culverts on 3 mi. C. L. Lawson Rd., Riley Twp., involving 10,450 cu. yd. earth excav., and 5,300 cu. yd. gravel. About $39,598.

Iowa

Sealed bids will be received at the office of the county auditor, Winterset, Iowa; Madison county until 1:00 p. m. April 5, 1921 for grading, draining, etc. on 11.35 miles of Primary Road from Winterset north to the Dallas county line. Approximate quantities 252,416 cu. yd. excavation, 3,487 ft. 6" tile, 180 ft. 12" tile and 3 tile intakes. Above work is included in Primary Road Project No. 36, and payment will be in cash from the Primary Road System. Iowa Highway Commission.

Sealed bids will be received at the office of the county auditor, Ft. Dodge, Webster county, until 11 a. m. April 6th, for grading and draining 9.895 miles on the Hawkeye Cut Off, south-west of Ft. Dodge requiring 66875 cu. yd. earth excavation, 74335 ft. 6" tile, 3385 ft. 8" tile, 45 Type A intakes and 9 Type B tile intakes.

Kentucky

A branch railroad will be constructed from the Louisville & Nashville Ry. at London or at Corbin, to develop 27,000 acres of coal and timber and in Laurel county, under the auspices of the Tidewater & Western Coal Co.

Kentucky & Tennessee Rwy. has asked the Interstate Commerce Comsn. for authority to build an extension 2½ mi. long in McCreary County, J. E. Butler is Gen. Mgr.

Illinois Central R. R. plans to extend 9 passing tracks between Paducah and Central City; estimated cost about $75,000. F. L. Thompson is Ch. Engr., Chicago, Ill.

Kentucky Construction and Improvement Co., Mayfield, wishes to receive bids for removal of one hundred thousand yards of over-burden now over their clay deposit. This clay pit is near the city of Mayfield.

Minnesota

Fillmore Co. plans to grade 4 mi. State Rd. 2 between Mabel and Rushford, 3 mi. State Rd. 4 west of Chatfield and 12 mi. State Rd. 6 west of Harmony. About $60,000. W. Dunbar, Preston, engr.

Missouri

State Highway Dept., Jefferson City, plans to build 4.32 mi. road from Christian Co. line northward through Galloway, Federal Aid Project 162, Greene Co., involving 19,230 cu. yd. earth and 150 cu. yd. rock excav., 2,634 cu. yd. borrow, 35,692 sq. yd. clay bound gravel, 188.1 cu. yd. Class B concrete masonry, 13,889 lb. reinforcing steel, etc., cost $47,272; 7.46 mi. road from Mountain Grove westward, State Aid Project S 20.26, Wright Co., 36,780 cu. yd. earth excav., 852 cu. yd. borrow, 320.5 cu. yd. Class B concrete masonry, 25,495 lb. reinforcing steel, etc., $33,699; 3.1 mi. road from Princeton eastward, State Aid Project S 20.35, Mercer Co., 26,868 cu. yd. earth excav., 746 cu. yd. borrow, 95.9 cu. yd. Class B and 22 cu. yd. Class C concrete masonry, 7,489 lb. reinforcing steel, etc., $26,077; 5.08 mi. state road north and south through Fayette, State Aid Project S 20.29, Howard Co., 31,186 cu. yd. earth and 44.8 cu. yd. rock excav., 64.4 cu. yd. Class B and 17.2 cu. yd. Class C concrete masonry, 3,876 lb. reinforcing steel, etc., $26,552; 2,568 mi. road south of Chamois, State Aid Project S 20.28, Osage Co., 14,777 cu. yd. earth excav., 20.4 cu. yd. Class C, concrete masonry, etc., $9,944.

Will construct 80 mi. gravel roads; $400,000 available; Elston, Axon & Russell, Engrs., 404 McDaniel Bldg. West Plains.

Will resurface 5 mi. Independence and Lees Summit roads in Jackson County. Address Fred. Brew, Independence.

New York

Two Onondaga County highways to be constructed are as follows: Fayetteville-Mycenae highway, 3.94 miles, Scott-Borodino road, 4.05 miles, closing the gap in the loop from Skaneateles to Homer. Other highways also contemplated are Port Bryon-Conquest, 5.9 miles, Cayuga County, concrete; Weedsport-Jordan, 3.29 miles, Cayuga County; Genoa-North Lansing, 5.04 miles, Cayuga County; Marathon-Cortland, 6.54 miles, and its connecting highway in Broome County. This Lisle-Killowag road, 4.37 miles of bituminous macadam; Solon-Gee Brook, 2.23 miles of bituminous macadam, in Cortland County. Williamstown-Redfield Road, 9.37 miles of bituminous macadam, Phoenix-Mexico, part 3, 2.2 miles of bituminous macadam in Oswego County. Watkins-Lodi, 11.43 miles, concrete, Seneca County.

North Dakota

The Red River Valley Ry. Co. Minneapolis, Minn., is planning to build a line from Argo to Grand Forks, at a cost of about $1,000,000.

Oklahoma

Tulsa County Commrs. will construct drainage system in Park View Dist., consisting of 5 mi. main canal and lateral ditches; Hughes Engineering Co., Engr., Bank of Commerce Bldg., Lewis Klein, County Clk.

Pennsylvania

Subway to be constructed at Erie under New York Central tracks at East Ave., City's share, amounting to $150,000, will include excavation, building conduits, sewers, pavement, sidewalks and retaining walls. Mr. Eichhorn, Street Director.

Plans for the proposed W. 12th St. subway at the Pa. R. R. crossing with an estimate of the cost of the project will be made at once and submitted to the State Public Service Commission. Faulkner Lynch, City Engineer.

Rhode Island

Town of Bristol plans to build permanent highways, involving 48,000 gal. bituminous macadam, 6,300 ton crushed stone, 100 cu. yd. rock excav., and 3,500 cu. yd. earth excav., etc. Private plans.

South Carolina

Greenville will grade and topsoil 12 mi. Jones Gap road; bids until May 1; vote Aug. 20 on $500,000 bonds; H. P. Dill, Greenville County Supvr.; L. M. Weisiger, Div. Engr., Laurens.

South Dakota

State Highway Comn., Pierre, receives bids in spring, grading and draining 19.92 mi. Yankton-Salem Rd., 36 ft. wide, Federal Aid Project 77, Yankton Co., involving 115,000 cu. yd. common excav., 1,940 lin. ft. concrete or corrugated iron pipe, 420 cu. yd. concrete for culverts, 20,000 lb. reinforcing steel, etc. About $86,790. F. W. Schreiber, state highway engr.

Tennessee

Bd. Supervs. Campbell Co., plans to construct 13½ mi. road from La Folette to Anderson Co. line, macadam. About $300,000.

Utah

Carbon Water, Land & Power Co. having plans prepared rebuilding Mammoth dam. This reservoir to store water for Price River Irrigation Dist. About $125,000. W. W. Jones, Price, engr.

West Virginia

Comrs. Pleasant Co. will grade 2 mi. road from Ravens Rock to Bens Run, 26 ft. wide, involving 17,140 cu. yd. earth excav. About $27,000.

New River Raleigh & Pocahontas R. R., recently chartered with $1,000,000 capital stock, plans to build 15 or 20 mi. standard gauge railroad from a connection with Chesapeake & Ohio Ry. at mouth of Glade Creek, on New River, to develop coal lands on Creek in both Raleigh and Summers Counties.

TRADE NOTES

The Associated General Contractors of the Pacific Northwest and Northwest Master Builders Association held a joint convention at Spokane, Washington on March 1, 2 and 3rd, 1921.

The principal business before the joint convention was the question of affiliation of the Builders Association with the General Contractors Association. On account of the common interests of the two organizations, particularly with reference to the items of labor and material, it was, after much discussion, decided that the two organizations unite.

The educational and instructive features of the convention were interesting. Among the principal addresses made were: "Housing" by W. J. Hindley, former Mayor of Spokane. "Banking and the Contractor" by E. E. Flood, Vice President Exchange National Bank, Spokane, "The Legal Phase of the Contracting Business" by Ex-Senator George Turner of Spokane. "State Highway Construction" by Mr. Herbert Nunn, Oregon State Highway Engineer. "Municipal Construction" by Mr. A. D. Butler, City Engineer, Spokane; and "Bonding" by Mr. Sam Mitchell of Jones and Mitchell, Spokane.

A program was also prepared and carried out for entertainment of the wives and their lady friends of the contractors visiting Spokane during the convention.

Dwight P. Robinson & Company, Incorporated, a large firm of engineers and constructors of New York, has recently opened branch offices in Montreal in the Dominion Express Building. Alexander C. Barker, Vice-President, is in charge of the office. The company is a consolidation of Westinghouse, Church, Kerr & Co., Inc., and Dwight P. Robinson & Co., Inc., and has done extensive construction and engineering work in Canada for the Canadian Pacific Railway, Canadian Salt Company, Canadian Crocker-Wheeler Co., Dominion Government, Aetna Explosives Company, Grand Trunk Railway and others.

The Lakewood Engineering Company, Cleveland, announces the appointment of Kelly Powell Limited, 403 McArthur Building, Winnipeg, Canada, as agents for the Province of Manitoba, Saskatchewan, Alberta, and Western Ontario, for the sale of Lakewood paving, construction, and industrial equipment.

Locomotive Superheater Company Changes to The Superheater Company

For years the Locomotive Superheater Company as its name implies has served the steam railroads of the world and the millions of people who depend on the railroads for transportation.

Necessity for greater conservation of fuel in other fields in addition to that represented by the steam locomotive is urgent.

A realization of this necessity has resulted in the expansion of our organization, to serve in all fields where steam is used for power. Valuable aid has already been rendered ship owners and operators; through the application of Elesco Superheaters, railroad shop plants, industrial plants, public utility operations and excavating equipment are operating more effectively and more economically.

To render still greater service in effecting economy in fuel by the pre-heating of water, our organization has become actively engaged in the intensive development of feed water heating equipment for locomotive and marine application.

With this expansion, the name of our organization has become inadequate: effective March 1, 1921, therefore the name of Locomotive Superheater Company is changed to The Superheater Company.

In making this announcement, may we renew our assurance of service to those whose co-operation has made it possible for us to render still greater service; to those we have not as yet been privileged to serve, may we assure every possible assistance—assistance backed by an organization whose record is significant of success.

The Blaw-Knox Company, of Blawnox (Pittsburgh), Pa., with branch offices in the largest cities from coast to coast, is now entrenching itself in the South. Having but recently established a district sales office in Birmingham, Ala., the company on April 1st opened up a new sales territory in the Southwest, with headquarters in Kansas City, Mo. In addition, the Blaw-Knox Company has sales offices in New York, Chicago, Detroit, Boston, Baltimore, San Francisco and Sheffield, Eng.

The Kansas City office, which is located in the Interstate Building, is in charge of R. B. Randall, formerly connected with the Company's Chicago office, who will be known as Manager of the Southwestern Territory. Mr. Randall will be pleased to answer inquiries concerning any of the following Blaw-Knox products: Blaw Clamshell Buckets, Blaw Steel Forms for concrete, Knox Water-Cooled equipment for high temperature furnaces, Blaw-Knox Sectional Steel Buildings, Quixet Garages, Transmission Towers, fabricated steel products and pressed, riveted and welded steel work of every description.

Effective at once, Mr. Robert C. Weller is appointed General Sales Manager of The Lakewood Engineering Company with headquarters at Cleveland. Mr. Weller is in full charge of sales work.

Effective March 1st, Mr. Carlton R. Dodge is appointed Western Sales Manager of the The Lakewood Engineering Company, with headquarters at 1215 Lumber Exchange Bldg., Chicago.

"Little boy," asked the well-meaning reformer, "is that your mamma over yonder with the beautiful set of furs?"

"Yes sir," answered the bright lad.

"Well, do you know what poor animal it is that has to suffer in order that your mamma might have those furs."

"Yes, sir. My papa."

Unsociable Henry

"I think you were absolutely wrong, Henry, about that furniture."

"Yes, dear."

"And about the wall paper."

"Yes, dear."

"Now, look here, Henry: if you're not going to be sociable, I'm going to bed!"

—The Passing Show (London).

Lives of Grape Men

(With apologies)

Lives of "grape" men all remind us,
We can make our own moonshine,
And, departing, leave behind us
Footprints that the sleuths may find.
Footprints that perhaps another,
Trailing o'er this desert plain,
A forlorn and "hip"wrecked brother,
Seeing, may take part again.
Let us, then, be up and brewing
With a heart, all thirst to slake;
Stills achieving; stills pursuing,
Learn to label and to wait.

—Ex.

REVIEW OF BOOKS and CATALOGS

We shall be glad to review, in this column, such books and catalogs as are sent to us. Books reviewed in these columns will be supplied by The Excavating Engineer Publishing Company at the price named.

HIGHWAY CONSTRUCTION WITH AUTOCAR MOTOR TRUCKS. 16 pages, 9" x 12", showing the advantages of the Autocar truck on road building jobs. The purpose of this booklet is to assemble for the benefit of all highway builders the results of the experience of those who have put into practice newer methods of highway construction haulage. The booklet is well illustrated with many photographs showing the various uses of trucks in highway construction and blueprints of Autocar trucks showing dimensions. *The Autocar Company, Ardmore, Pa.*

LAKEWOOD CLAMSHELL BUCKETS—A 16-page illustrated booklet describing Lakewood clamshell buckets and their different applications. Also giving enlarged views of bucket showing design and workmanship. The last page contains a list of well known users of these buckets. *The Lakewood Engineering Company, Cleveland, Ohio.*

TRUCK MANUFACTURERS WILL BUILD A CHASSIS—An illustrated folder 8½ x 11, giving list of all truck companys that build a chassis for Lee dump bodies. Also illustration and description of the time saved by four large companies through the application of Lee dump bodies. *Lee Trailer & Body Company, 2343 South La Salle Street, Chicago, Illinois.*

ONLY 8000 TRUCKS WILL BE NEEDED—An illustrated folder, 8½ x 11, describing how thru use of Lee dump bodies only 8000 trucks are needed for the building of the 40,000,000 square yards of concrete pavement that has been estimated for 1921. Also giving description with illustration of four large contracting companies and their uses of the Lee body in road construction. *Lee Trailer & Body Company, 2343 South La Salle Street, Chicago, Illinois.*

BETTER STEEL FORMS—A new 16-page booklet has just been published by The Lakewood Engineering Company, Cleveland, describing the Lakewood-Hotchkiss line of steel forms for road, sidewalk, curb, gutter, culvert, foundation and wall construction. The booklet is profusely illustrated and shows the application of the complete line. The Lakewood-Hotchkiss method of construction is particularly interesting as by its use better concrete and perfect expansion joints are practically certain. *The Lakewood Engineering Co., Cleveland, Ohio.*

"BETTER GOOD ROADS FOR MARICOPA COUNTY, ARIZONA" is the name of a new booklet published by the Lakewood Engineering Company, Cleveland, describing Twohy Bros. 280 mile road job. The booklet is mostly pictures, reproduced in brown duo-tone ink on very fine paper. A cactus plant, on the front cover, gives some idea of the nature of the country in which this tremendous road building program is being carried out. Copies of the booklet will be sent free on request. *The Lakewood Engineering Co., Cleveland, Ohio.*

MODERN ROAD BUILDING AND MAINTENANCE—By Andrew P. Anderson, highway engineer, Bureau of Public Roads, U. S. Department of Agriculture 6" x 9", 146 pages, well illustrated with many full page photographs and diagrams showing various kinds of road in cross-section.

A very complete and up-to-date book covering thoroughly the principles and practice of modern road building, prepared for the use of all who are interested in public roads and highway traffic. All branches of road building are covered, including planning new roads, road materials, road construction, road maintenance and repair, and the use of explosives in road construction. Copies of this book may be obtained free by writing the *Hercules Powder Company, Wilmington, Delaware.*

STORAGE OF SACKED CEMENT—A booklet recently published by the Portland Cement Association, describing the best methods of storing and handling sacked cement. If cement is properly stored it may be kept for several months without depreciating in quality. The purpose of this booklet is to show how this can be done. Suggested plans for storage buildings of wood and concrete are given, together with materials required for these buildings. *Portland Cement Association, Chicago, Illinois.*

A Soft Answer

A salesman was traveling a country road when suddenly he saw a house burning. Running up, he pounded on the door lustily, till an old woman opened it.

"Madam, your house is on fire!" he exclaimed.

"Eh?"

"I say your house is on fire!"

She put her hand to her ear and leaned toward him. "What?"

"Your house is burning up!" he roared.

"O! Is that all?"

"That's all I can think of just now, madam," he gasped. —*The American Legion Weekly.*

The Barber College Yell

(From the N. Y. Sun)

Cut his lip!
Gash his jaw!
Leave his face
Raw! Raw! Raw!

The Bugamist

A June bug married an angleworm;
An accident cut her in two.
They charged the bug with bigamy;
Now what could the poor thing do? —*Ex.*

Reason Enough

"How does it happen I never find you at work, Mose?" inquired the white foreman of a gang of colored laborers. "Every time I come around you are loafing."

"How come? I'll tell yoh how come, boss," explained Mose aggrievedly. "Dem rubber heels of yours don' make no noise a-tall."

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